

For Description of Headframes, Cages, Ships and Tipples at Navajo No. 5, See p. 2.

# COAL AGE

AUGUST 15, 1922



## No Mule Ever Made Progress By Kicking

and no man ever brought about action of a progressive nature simply by thinking about it and wishing that he could do a thing.

Right at this very minute there are men who wish they had all of their mine cars equipped with Hyatt bearings.

Some of the men may be superintendents and they could get their cars equipped with Hyatt bearings if they would simply get together a report which would show the financial powers just how much more profit could be made if their cars were easy running and economical in operation.

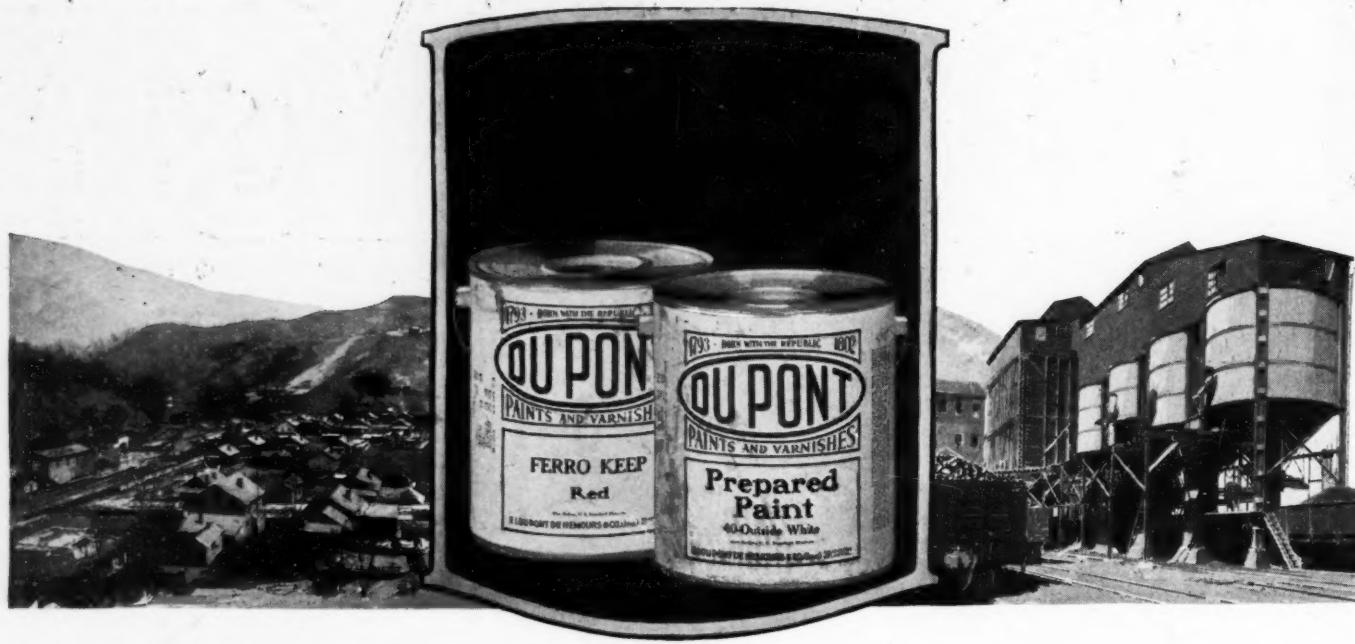
Some of the men may be foremen or shift bosses. They could get easy running cars if they would just tell their supers how much more coal could be loaded, how many wrecks could be eliminated, how many more cars could be handled by the day men and by the locomotives, not to mention how much time could be saved by the infrequent lubrication necessary when Hyatt equipped cars are used.

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If you need more information let one of our engineers call to see you. Just drop us a line or two. It is part of our service and there will be no obligation on your part, but we think that there will be on ours for we feel that you will ever afterwards specify Hyatt bearings for the trucks for your old or new cars.

**Hyatt Roller Bearing Company**  
NEWARK, NEW JERSEY



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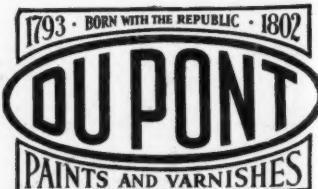
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# COAL AGE

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C. E. LESHER, *Editor*

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## ***Do Something! Do What?***

MASSACHUSETTS legislators are going to settle the moot anthracite question by the simple method of boycotting that fuel. "You can't play in my back yard," say the members of the Joint Special Coal Investigating Committee of Massachusetts, "unless you miners and operators quit scrapping." The Committee says it will recommend that all New England abandon the use of hard coal and turn permanently to substitutes, greatly favoring the smokeless coal of West Virginia.

New England can, if it must, get along without anthracite, but it will not. The convenience and comfort of anthracite have made the householders in that chilly clime habit-bound to its use. Welcome as the news may be and heartening as well, to the smokeless producers that the committee is going to add some millions of tons annually to their markets, they are too familiar with the situation to send the coal up there before it is ordered.

Anthracite has, as the Committee states, become expensive, but so have shoes and cotton goods, "almost to the point of luxury." If it is so simple to induce the New Englander to adopt soft for hard coal, why indulge in the luxury longer? Let the committee poll its constituency to find how willing they may be to forego the luxury fuel. If it is so easy to convert the habits of the people, why should there be "further suffering for many and possibly death" if the hard-coal miners strike in September?

The committee is hitting the nail on the head when it says that "the patience of the anthracite consuming public is strained to the breaking point. It will brook no stoppage in its fuel supply." But what is the public going to do about it? Tell the President to take over the industry? and if he does, will Boston citizens volunteer a trip to Scranton and dig coal, as they volunteered and did public service at home when their police force struck?

This committee says it takes no sides in the present controversy, believing that both sides should adopt a more conciliatory attitude. The check-off is a clean-cut issue, either the operators grant it, or they don't; either the union drops its demand or strikes for it. There is no half way measure, no compromise settlement here. Wherein enters the "conciliatory spirit"?

Why don't these Massachusetts gentlemen look into the matter that is at issue between the anthracite miners and operators—the check-off—and decide which side to back? But casual investigation will show them that strikes alone cause the shortages of hard coal they decry and that the United Mine Workers are demanding that the operators force the collection of funds to line its war chest so it may strike longer and harder. Then if the Massachusetts' consumers conclude that enough is enough, that the union has attained a satisfactory growth, let them cease pointless generalities and get

down to the brass tacks of seeing it through. Let them say to the world, "We will get along this winter with what hard coal we have and the abundance of soft coal we can get, in order that another year we will not need fear a strike and shortage; that we may, those who prefer the luxury, have an uninterrupted supply."

What sort of sports have we in Massachusetts, who would pass the buck to Washington, call a special session of Congress, ask the President to do something? Do what? This is no quarrel between the capital and the labor of the anthracite fields, no dispute regarding the rights of abused workers. As is pointed out by the anthracite operators, it is a quarrel among the men. A militant union is demanding that the operators collect dues and assessments from all the workers, because it cannot, or is too lazy to collect them. No one for a moment supposes that Congress could if it would impose such a situation on the industry. If New England and other hard-coal consumers want peace in this industry, let them make their voices heard in defence of good Americanism.

## ***Preparing the Public's Mind***

IN THIS day when we depend on a few headlines in the morning paper to keep us abreast of the times, the news that gets attention is that which stirs. You may call it "inflammatory" if you will, but if it is to get across to the American people it must have some "pep." Steady pounding away on everyday truths plainly told will in the end harvest a crop of understanding, but for the action of today and this week and even this month or year, there must be headline value to the story. Deprecate it as you may, that is the condition of a sensation-satiated popular mind.

The Coal Commission has called attention to the fact that "some of the material from both the operators and the United Mine Workers presented to it is calculated even if not intended to inflame the public mind for or against one of the parties," and considers these charges and counter charges "most unfortunate at this period of [the anthracite] negotiations." The American people are not so callous that a year after the event the mention of Herrin does not make them "see red." If the recital of that and other outrages that characterized the strike of 1922 serves to remind America that a majority of the coal-mine labor is dominated by a force that permits such practices, the operators will doubtless be willing to plead guilty to the charge of thus inflaming the public mind. What is to be gained by shutting eyes to the unpleasant, unlawful features of such industrial strife? Can it be that forgetfulness will purge them from the ranks and encourage the officers of the union to prevent their recurrence?

In its anthracite report of July 9, the Coal Commission had itself some headline news. It was not the finding that the operators realized so much profit or the mine workers certain annual earnings, not that the

commission had urged coal be held henceforth as a public utility. Rather it was that in the event of an emergency in hard-coal supply, whatever the cause, the President of the United States be authorized to take over the mines, operate them, fix profits and prices for the operator and wages and working conditions for the miner. Again it may be said with a slight change that the American people are not so callous that a year after the event the mention of the 1922 hard-coal strike does not make them "see red." They rose to the occasion and applauded the headlines that followed the publication of the report, "Coal Commission Recommends President Take Over Coal Mines." There was some "pep" in that news.

If the situation is so serious that nothing short of the arbitrary hand of the government may serve to give the people necessary fuel, then indeed we are in desperate straits. It must not be assumed that the Coal Commission came lightly to a decision so unusual, so drastic. The evidence before them must have been compelling and the necessity great to have provoked such an indictment of the ability of this great industry to function continuously.

Even the most casual observer must know of the similar threat by President Roosevelt in 1902. Then the mine workers were on strike and the operators steadfastly refused the peaceful mediation of the President. He was forced to threaten the use of Federal troops and the imposition of his power before he could compel the operators to concede arbitration of their differences with the workers.

Even the most casual observer of the situation today, and in 1922, must know that the positions are now reversed. The operators learned a lesson in 1902, the union has its lesson yet to learn. It is the union now that is militant, domineering, arbitrary and recalcitrant. If the President this year finds it necessary to exert emergency power over the anthracite industry it will be because the United Mine Workers will concede nothing of their power. Perhaps this is why Mr. Gompers objects so strenuously to the Commission's proposal. It will not be because of any position so far assumed by the operators. To argue otherwise is to impugn their good faith in reiterated offers to arbitrate any and all differences.

With sublime patience and forbearance the Coal Commission last month counseled "that each side forget past differences and grievances" and hoped "that a constructive view will be taken, not controversial in its character, so as to assure a continuous output from the anthracite mines." This sound advice from a commission not set up to determine the merits of this immediate controversy has not prevented a deadlock in the hard-coal negotiations. The matter is fast drifting into a position where President Coolidge is being expected to "inquire into the reasons for failure to agree," as recommended in the supplemental report on labor relations in the anthracite industry, just released by the Coal Commission. The Commission's recommendation has prepared the public to expect him to act.

PAUL WOOTON, Washington correspondent of *Coal Age*, whose stories on the coal situation as it is viewed in the Nation's Capital are conceded to be the most timely and interesting coming out of that center, is now in Europe. On his return *Coal Age* will have a series of timely stories of his impressions of the coal situation abroad.

### Preparing for the Fall Rush

THOUGH there is yet uncertainty about the supply of anthracite after Sept. 1, and every possible pound is being mined and shipped, there is no doubt but that the country is preparing itself with ample reserves of soft coal in anticipation of a heavy fall demand with transportation facilities curtailed. There will be no suspension of mining in the soft coal regions after Sept. 1, induced by labor trouble. Since April 1, the country has been running a race in the storage of coal. If the consumer wins, the suspensions of bituminous coal mining will result from lack of market, otherwise the cause will be car shortage.

Whatever be the outcome, there can be no regret over not having tried. Since the beginning of the coal year consumers have added to their stocks some 10,000,000 tons of soft coal and are even yet putting it away at bargain prices. With the total now somewhere near 50,000,000 tons, the safety line may be said to have been passed. Apparently nothing but a prolonged shutdown in the anthracite region can produce a demand for soft coal but what the railroads can take care of without serious car shortage in the coal fields.

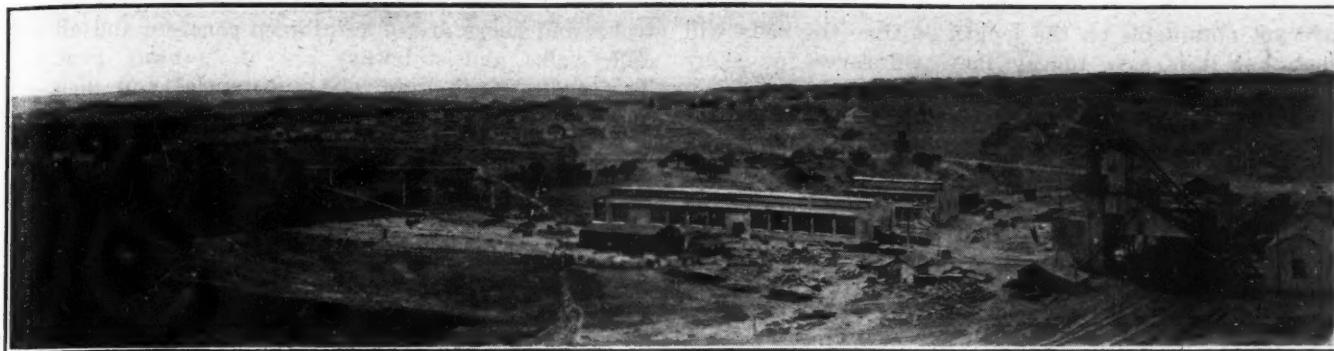
Business interests discounted the slump in July. The spring rate of industrial activity was too much for the hot period. There is already evidence of an August pickup and having continued so far with a demand for soft coal approaching 11,000,000 tons per week, there is reason to anticipate that it will hold to this level until other freight crowds it off the rails in the fall rush. As to the course of the market after that the trade is uncertain.

### The Vagaries of Compensation

WORKMEN'S COMPENSATION is provided in every coal mining state except only Arkansas and Missouri. If payments for compensation do not actually add to the cost of coal, the amounts so paid, which range from 3c. to 10c. per ton, are at least clearly recognized and definitely known to the operators. The operators and workers have accepted as just the principle that the one group should be charged with major responsibility for injuries suffered by the other group. The only question that now arises, other than the determination of the proper rate, concerns the matter of preventing its serious abuse. It is not an uncommon experience for an operator to find in his employ a worker who is receiving payment for complete disability for an accident at some other property.

A study of workmen's compensation laws has recently been made by the National Industrial Conference Board, an abstract of which is published elsewhere in this issue of *Coal Age*. The striking facts brought out by this report concern the extremely variable results of the operation of these laws in the different states. As pointed out in the Board's summary, the compensation is first of all a medical question, because a doctor's examination is the first step in establishing compensation.

It might be added to what the Board says that local decisions come down so fast as to confound the observer. Every case seems to present peculiar aspects and the compensation boards in each state are busy establishing precedents and interpreting former decisions. The employer hardly knows where he stands and is quite naturally on his guard to hold the awards to a rightful minimum.



Navajo No. 5, Gallup American Coal Co.

## Auxiliary Shaft Both Hoists and Lowers Coal at Two- Seam Navajo No. 5 Mine in New Mexico\*

Cars from Upper Seam Lowered in Auxiliary Shaft to Lower Bed, from Which Coal Is Hoisted up Main Shaft by Skips—  
Chain Car Feeder Handles Loads at the Main Bottom

BY H. B. COOLEY†

General Superintendent, Allen & Garcia Co., Chicago, Ill.

**I**N MOST respects the screening and preparation equipment at Navajo No. 5 mine of the Gallup American Coal Co., near Gallup, N. M., is similar to that of other bituminous coal tipples. Among the unique, or at least unusual, features to be mentioned are what might be called the dual screening arrangement. Navajo No. 5 is operated primarily to insure a supply of coal for metal mines, mills and smelters in Arizona and New Mexico. Coal for their needs requires only a bar screen for its sizing.

However, there is a market for good domestic coal, and this trade, being naturally more exacting, makes shaker-screen preparations necessary. For this reason the tipple is provided with what is practically a dual

screening arrangement—that is, bar-screen sizing, making 1-in. lump and slack, and shaker-screen sizing making lump, egg, nut and slack.

A second somewhat unusual feature is the use of rubber-covered belt conveyors for picking tables and loading booms. It is not claimed that this is the first adaptation of belt conveyors to this service, but the more common type of picking table and loading boom is the apron conveyor. The conveyors used throughout the job are belts, the expression "carry it on rubber" being strictly true in this installation. Six-ply rubber belting with  $\frac{1}{2}$ -in. rubber cover is carried on pressed-steel idlers, their spirally grooved roller bearings being lubricated with grease in a manner insuring a positive feed at all times. The first cost of such an installation is less than that of an apron conveyor, and the number of wearing parts is reduced to a minimum. No figures

\*This is the second part of Mr. Cooley's article on the Navajo No. 5 mine. The third part, covering power plant, water supply, safety work and company buildings will appear soon. The first part appeared in *Coal Age*, Aug. 2, 1923.

FIG. 1

### Rubber Belts for Loading Booms

These loading booms serve also as picking tables and are 5 ft. wide. They travel at a speed of 80 ft. per minute. The front boom is loading egg and the rear one lump coal. A saving in first cost is effected by the use of the rubber belt. The belt idlers run on roller bearings. All the conveyors on the Navajo tipple embody rubber belts in their construction.



are yet obtainable on the length of time the belts will last, but it is safe to say they will serve for many years. Fig. 1 shows the belts carrying coal.

The third unusual feature is the arrangement for loading four grades of coal on three tracks. Though 2x1-in. stove coal is being made, the slack is carried to either one of two 150-ton storage bins located on the switch below the tipple and loaded out on the same track as is used for the loading of "stove," or nut, coal. These bins also serve as auxiliary storage pockets for boiler coal during "shutdown" periods. This stock is supplemented by the coal in a 200-ton coal bunker located in the boiler room.

The provision for utilizing burnable refuse for the picking tables is noteworthy. Bone coal occasionally is found in the Gallup seams. The heat value of this bone is around 10,500 B.t.u. and when crushed it can be readily burned on properly designed chain-grate stokers. This material is removed from the picking tables by hand and carried to a storage bin by an 18-in. belt conveyor.

To avoid installing an independent elevator for the hoisting of this bone coal to the crusher the main hoisting skips are utilized for this purpose. At convenient intervals this material is fed into the skips and dumped through a bypass gate to the crusher, whence it passes on to the boiler house over the same belt conveyors that carry the other fuel supply. This inferior coal, of course, is handled only after hoisting hours or at times during the day when the hoist otherwise would be idle.

## RETARDING CONVEYOR FEEDS BOX-CAR LOADER

In this territory most of the lump coal is loaded in box cars. For this operation a drag-conveyor box-car loader with an extension end is provided. This machine is fed by a short retarding conveyor running at right angles to the track, this belt in turn being fed from the discharge end of the lump loading boom.

This short retarding conveyor is what might be called by some operators a "needless refinement." But the Gallup American Coal Co. considers any machine a valuable asset which helps to put the company's lump coal on the market clean and free from undersize. It is not unusual at other plants to see perfectly sized lump coal from a shaker screen badly shattered in passing from the screen to its resting place in a box car.

The usual facilities are provided for the furnishing of local, or wagon, coal, provision also having been made for crushing for industrial use any part of the mine output which, being destined to that use, needs to be reduced in size. The accompanying flow sheet (Fig. 2) and the general design plans (Figs. 3, 4 and 5) illustrate the preparation plant and general arrangement. Fig. 8 shows the headframe.

The entire structure is substantially built and fireproof throughout. Steel sash are freely used and a large skylight affords overhead illumination for the picking shed. The interior

walks and floors are of reinforced concrete and all outside walks and stairways are of "subway grating." This material is light and substantial and does not become coated with snow and ice during the winter months. It is rather expensive for large areas, but its use entirely eliminates fire hazard and all maintenance cost except for an occasional painting.

## AUXILIARY TIPPLE HAS SOLID-CAR SELF DUMPER

The auxiliary tipple is arranged for cage hoisting. These cages are somewhat unusual in that they are designed to handle cars without end gates, this type of car generally being used with a rotary-dump installation, such as that at the bottom of the main-hoist shaft. The action of this cage can be understood by referring to Figs. 7 and 9. The tipping guides and mechanism are arranged to revolve the car through 135 deg., in which position the car is completely emptied.

A flygate, placed directly at the dumping point and operated either manually or by compressed air, enables the man who directs the dumping to divert the coal to

a set of bar screens and the rock to a 50-ton storage bin. This rock bin is adjacent to the shaft and directly over a larry track leading to the rock dump. By referring to Fig. 6 it will be noticed that there are three coal-loading tracks under the tipple.

It never was intended that this auxiliary tipple would be a continuous operating plant for coal preparation; therefore the bar-

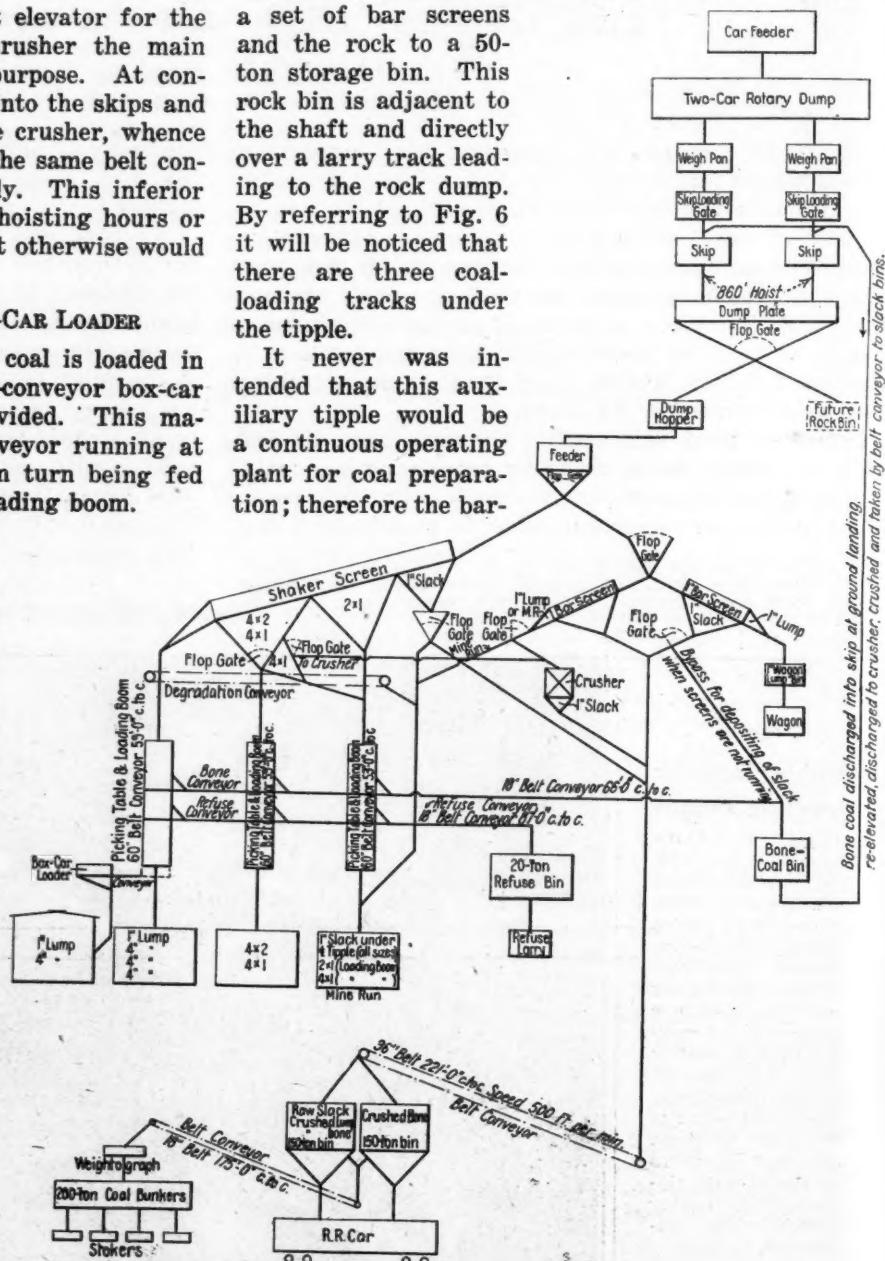
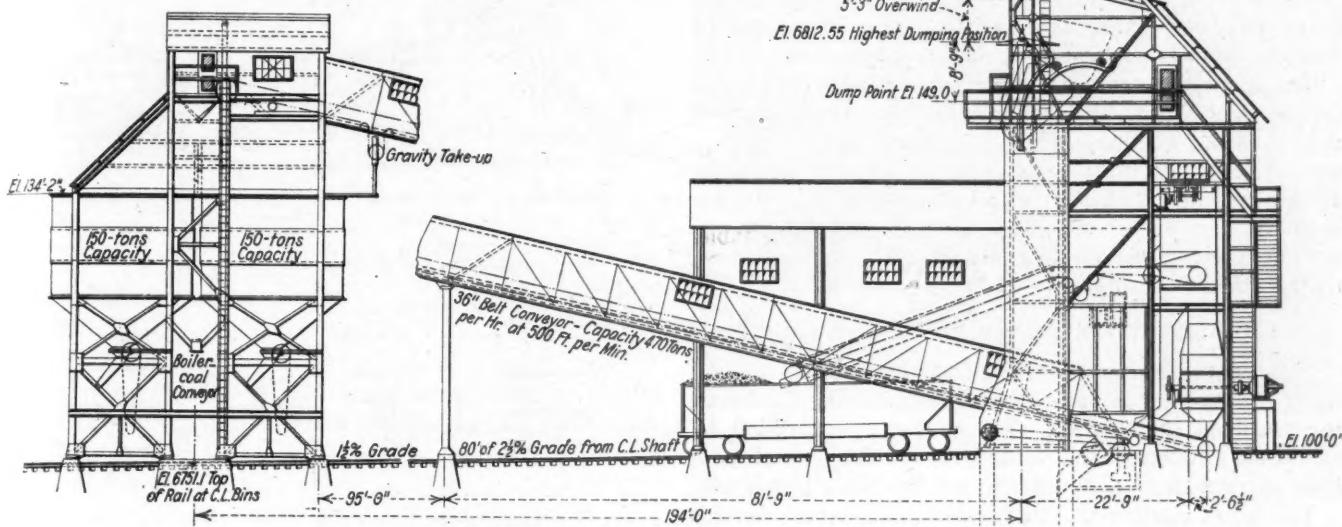


FIG. 2—FLOW SHEET FROM MINE TO RAILROAD CAR  
 Coal can go either (1) to the double-deck, double-leaf, pendulum-hung shaker screen with perforations and gate arrangements to supply 4x2-in. or 4x1-in., 2x1-in. coal and 1-in. slack or (2) to a 1-in. bar screen which when veed gives mine run.

FIG. 3—ELEVATION OF MAIN TIPPLE, SLACK CONVEYORS AND SLACK BINS

The sheave deck is 85 $\frac{1}{2}$  ft. above the top of the rail. A 36-in. belt conveyor carries the slack up to the two 150-ton bins either for shipment on the 2x1-in. stove-coal tracks or for use in the boiler house. In these bins coal can be kept for the running of the plant during a shutdown. The illustration shows the way in which the skips are dumped.



screen sizing was considered ample. The main requirements of this headframe were that it carry the cage, sheaves and rock bin. Screening was not proposed. In laying out a design for these requirements, however, it developed that by slight modifications in the design of the engine brace this part of the structure could be used to carry a barscreen installation with practically no increase in cost except for the bar screen itself.

This headframe is arranged with the sheave wheels placed side by side, an arrangement ordinarily not as economical from the standpoint of design as where the sheaves are placed one over the other and the hoist located at the end instead of at the side of the shaft. That plan was impossible in this case for a reason that is not common in most coal fields.

The workable seams of coal are reached by these

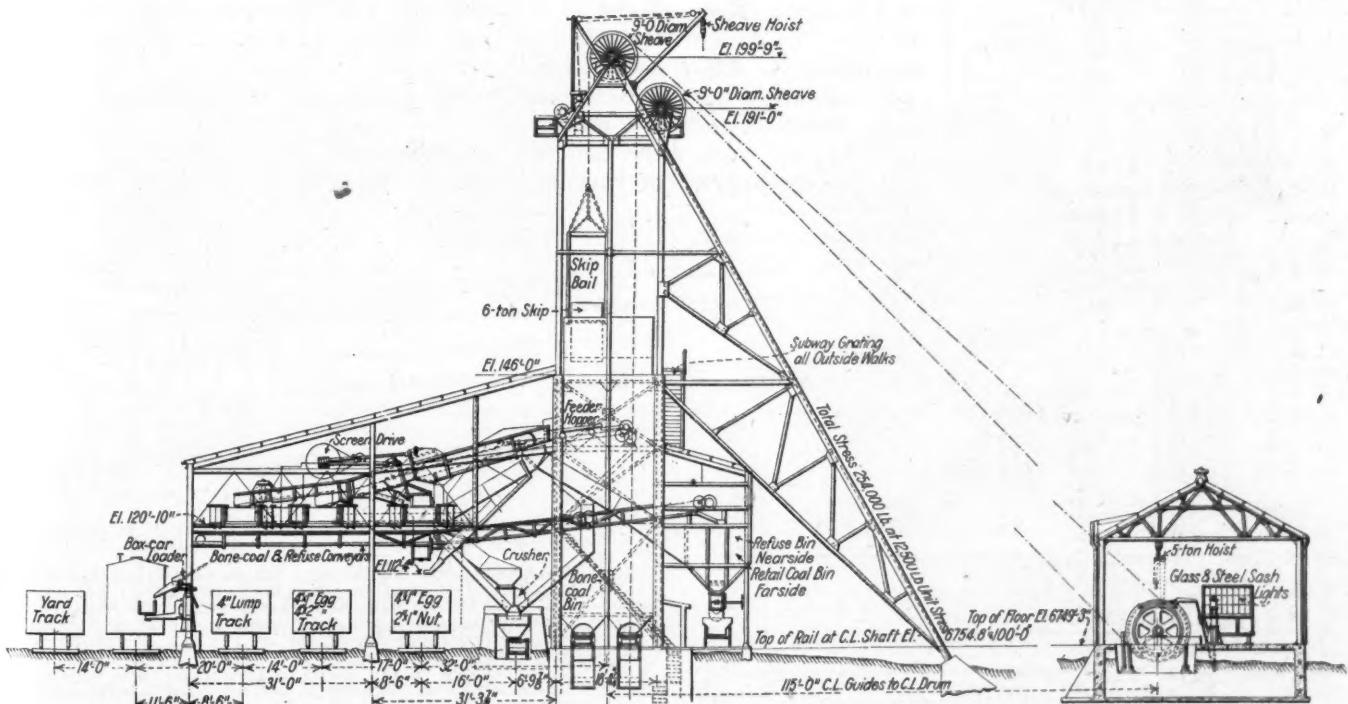


FIG. 4—ELEVATION OF MAIN TIPPLE AND HOIST HOUSE SHOWING SKIP AND TRACKS

The hoist rope is 1 $\frac{1}{2}$  in. 6x19 plowsteel rope. The maximum load is 35,180 lb., and the breaking strength is 188,000 lb. The frictional strain is 1,330 lb. and the acceleration strain 2,830 lb. The bone coal is fed from the bone-coal bin into the skip and

raised to such a level that it can be dumped. A flop gate admits this coal to the crusher, where it falls on a conveyor and is taken to the boilers for feed. The boiler furnace is designed to burn efficiently coal containing 45 per cent ash.

shafts but the development of the upper seam would not be warranted if a separate plant were required for its operation. It is planned at Navajo No. 5 to mine the upper seam in conjunction with the lower, caging the cars at the auxiliary shaft and dropping them to the lower seam. From this point the coal is handled with that from the lower seam through the main shaft and the main preparation plant.

This plan of operation requires the installation at the auxiliary shaft of a hoist capable of being adjusted for hoisting from different levels. For this a double-drum hoist with one drum loose is installed. This explains why the hoist is not placed at the end of the shaft.

The hoist has two 7-ft. diameter straight cylindrical drums, each drum being equipped with parallel-motion post brakes. The loose drum is engaged to the shaft by means of a friction clutch operated by a hydraulic thrust cylinder with control levers placed on the platform of the operative. The hoist is of the second-motion type and driven by a 500-hp. 2,300-volt induction motor through a single set of herringbone gears.

#### CAGES CAN BE HOISTED UP SHAFT UNBALANCED

Though the normal operation of the hoist is in balance, the motor has sufficient torque capacity for hoisting the load unbalanced. The motor is controlled by air brake reversing and secondary switches which provide current-limit acceleration and overload protection.

The hoist equipment is provided with safety devices to prevent overspeed at any point, over-travel and abuse of the hoisting equipment when hoisting either coal, rock or men. Fig. 10 shows the duty cycle on which the rating of the motor is based for both balanced and unbalanced hoisting.

Fig. 9 shows the general arrangement, and Fig. 11 shows the hoist and its control platform. Most of the loading equipment for skip-hoisting mines has been designed for handling ore, where breakage,

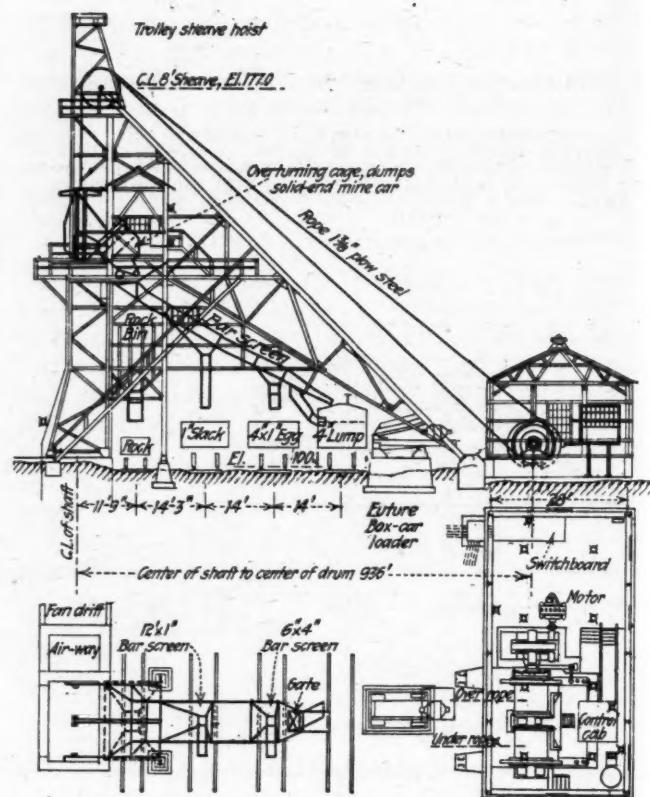
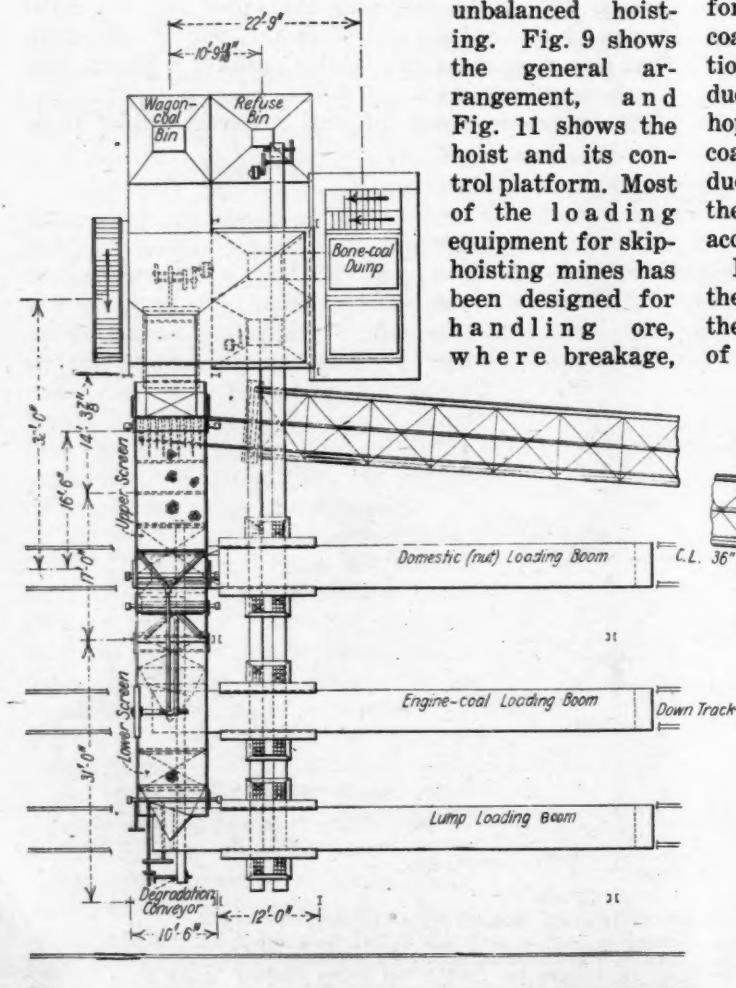


FIG. 6—SIDE ELEVATION OF MATERIAL HOIST

The tipple of the material hoist has only a bar screen and makes lump, egg and slack. The rope is 1 1/8-in. plow steel, its maximum hoisting load is 25,800 lb., its breaking strength is 144,000 lb., its frictional strain 750 lb. and acceleration strain 1,050 lb.

fortunately, need not be considered. Degradation of coal being something to be avoided, a coal-loading station should be so arranged that breakage will be reduced to a minimum. With this in view, no storage hopper is provided, and the path along which the coal flows between the loaded car and the skips is reduced to a minimum. The arrangement as shown on the accompanying illustration, Fig. 13, is intended to accomplish this purpose.

Referring to that picture and the flow-sheet, Fig. 2, the mechanical arrangement and method of handling the coal can be understood. It is as follows: Trips of varying length are brought to the shaft bottom by

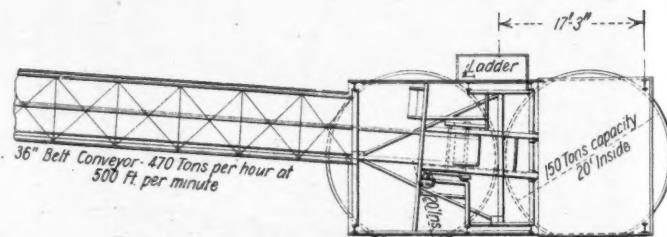


FIG. 5—PLAN OF MAIN TIPPLE, SLACK BINS AND HOIST HOUSE

A yard track, not shown, passes parallel to the box-car track at 14-ft. centers. It will be noted that the domestic coal or nut-loading track passes under the slack storage tanks, provision for loading being made at that point. A coal conveyor goes from the center line of the bin structure to the boiler room. The distance from the center bin of the guides in the shaft to the center line between the drums is 115 ft. It may be noted that the engine-coal and lump-coal tracks are covered by a single span of the tipple structure giving the loaders plenty of room for passing between cars, the tracks being set at 14-ft. centers. The domestic-coal and engine-coal tracks are at 17-ft. centers, the posts of the tipple intervening.

haulage locomotives and are there coupled to such loads as are standing on the load storage track. The movement of the trip from this point is controlled by a motor-driven chain "car-feeder" which engages a lug on the bottom of the car. The entire trip is moved ahead two car lengths at a time, the power being furnished by a 35-hp. motor. Deceleration and stopping are controlled by a powerful foot-operated brake acting on the head shaft of the feeder drive.

The chain and lugs on this feeder are unusually rugged and are designed to handle a trip of 40 cars, moving them through a distance of 21 ft. with a cycle as follows: Acceleration, 4 seconds; running-time, 14 seconds at a speed of 75 ft. per minute; deceleration, 2 seconds; rest period for dumping of cars, 8½ seconds. The skip is arranged for carrying the coal from three cars, hence the hoist cycle is 3/2 times as long as the dump cycle, or 43 seconds.

The use of this power-driven feeder has many advantages over a gravity operation, the most important being that the car motion is under positive control at all times and that the cars can be positively "spotted" in correct position for dumping.

A two-car, pneumatically operated, rotary dump is used for emptying the solid-end cars. It is essentially a rotating cage with the center of rotation coinciding

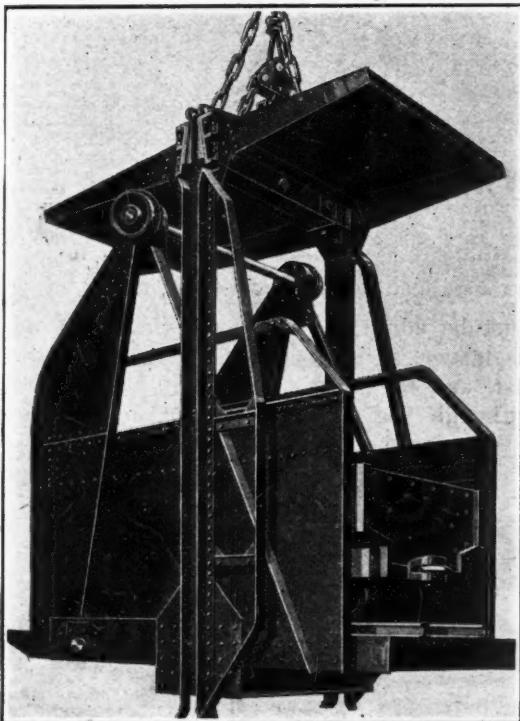


FIG. 7—SOLID-END CAR IN OVERTURNING CAGE

As the main tipple has a rotary dump the cars are made for that method of discharge. No rotary dump is provided at the material shaft and cages are used instead of skips. It has been found necessary in such cases to provide a cage that will dump the car through 135 deg., assuming, of course, that decaging with its loss of time and expense of labor is to be avoided.

with the center of the car hitching. The cars are dumped without uncoupling, there being sufficient play in the three-link hitching to permit of 135-deg. rotation. The crew at the bottom now consists of but two men, one of them the weighman. At present the trip rider goes around to the back of the shaft and cuts off the number of cars wanted for each empty trip. The actual time required for dumping two cars is less than seven seconds, and approximately 6 ft. of air at 90 lb. pressure is required for each dump. Compressed air for this purpose is furnished by the compressors in the



FIG. 8—MAIN HOIST WITH CONVEYOR TO SLACK BINS

It will be noted that three sides of the concrete shaft curbing are carried to the dumping point, thus insuring protection to the steelwork from the shaft gases and eliminating the vibration of the hoist.

power house through a 2½-in. line which was carried down the shaft during the sinking operation and increased in the concrete shaft lining.

The coal from each car in the rotary dump is emptied

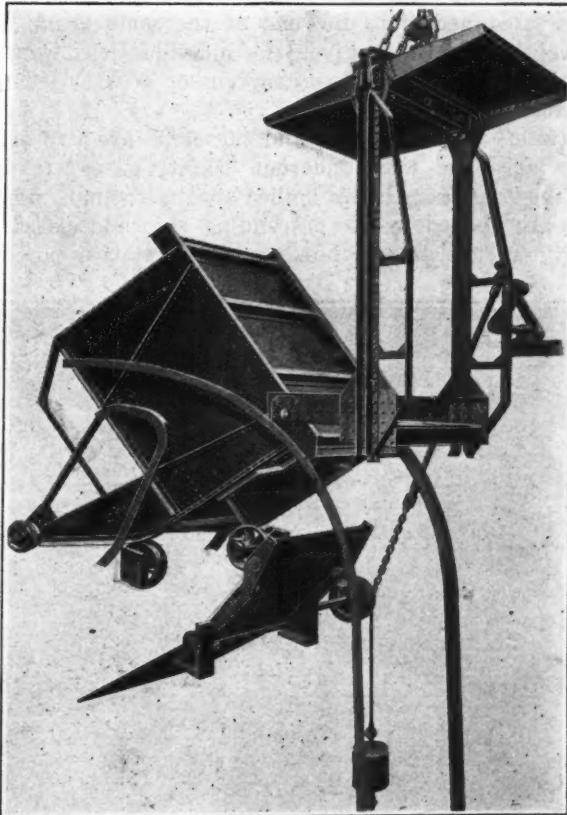


FIG. 9—OVERTURNING CAGE IN DUMPING POSITION

It was found necessary to provide a spill gate which follows the cage and projects under it so that all spill is caught and delivered onto the chute. It also was found that coal frequently spilled from the cage platform and the latest design of this spill gate embodies a pantograph extension which catches all spill from the cage platform as well. The spill gate is operated by a lever on the tipple which is engaged by angle guides on the bale of the cage.

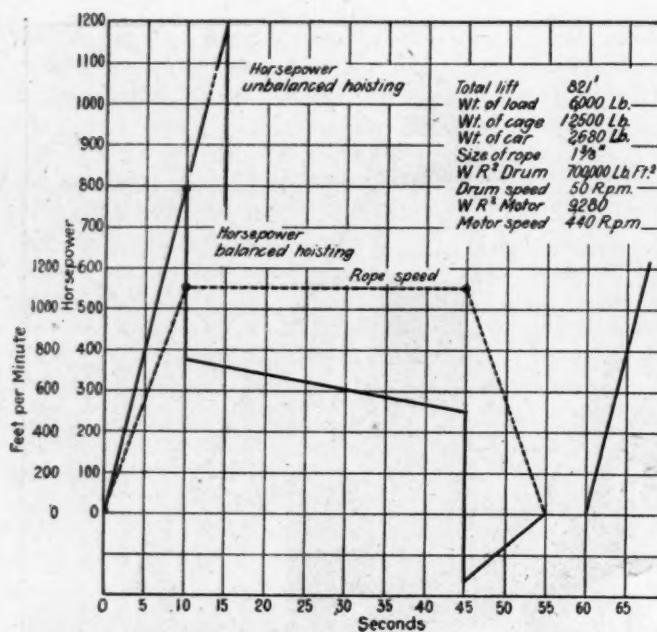


FIG. 10—DUTY CYCLE OF AUXILIARY-SHAFT HOIST  
Arranged for both balanced and unbalanced hoisting. The total lift is 821 ft., the load in the car 6,000 lb.; the weight of the car, 2,680 lb.; the weight of the cage, 12,500 lb.; the size of rope, 1 1/8 in.; the  $WR^2$  of the motor, 9,280 lb. ft.<sup>2</sup>; the motor speed, 440 r.p.m., and the rope speed, 1,100 ft. per minute.

into two independent weigh hoppers placed side by side. After the first two cars are weighed two more cars are dumped and the difference in weight is taken as the weight of the second cars. This operation is again repeated and the contents of the weigh pan then passes to the skip. The weigh beams on the scale are of the triple-beam type, and the poise on each beam is used to "balance the scale" after each weighing. A weightograph is connected to the end of the scale beam, and the weighman is thus given the individual car weights without any process of subtraction or possible chance of error.

Between the weigh pan and the skips are two short chutes arranged with undercut "safety gates" to prevent the coal from being spilled into the sump. These gates are opened by the descending skip and closed by gravity as the skip is hoisted. The relative position

of the bottom-loading apparatus is shown in the perspective view, Fig. 13.

The skips used are of the overturning type and have a normal capacity of six tons. They weigh 13,300 lb. each, making a ratio of weight of coal to dead weight lifted of 1 to 1.1.

An interesting comparison of weight ratios might be mentioned: In a cage-hoisting mine recently investigated the coal hoisted per trip was 4,500 lb., the car weighed 1,800 lb. and the cage (all steel) weighed 10,500 lb., making a ratio of weight of coal lifted to dead weight lifted of 1 to 2.7. Consequently the skip has a marked advantage in this respect.

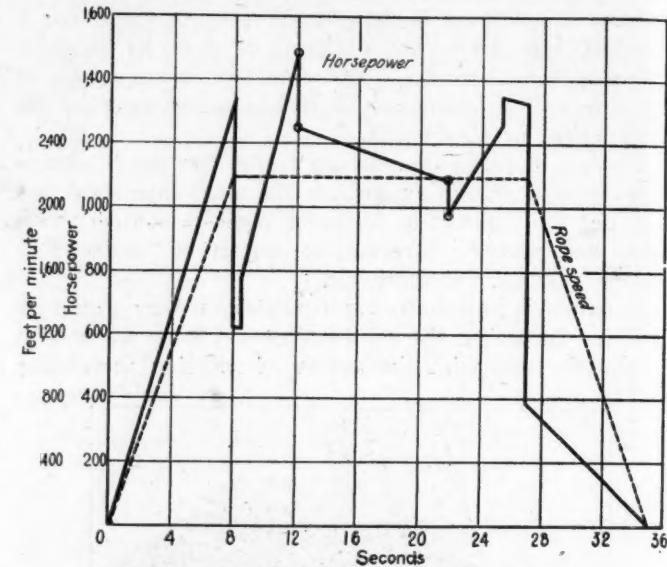


FIG. 12—DUTY CYCLE OF HOIST AT MAIN SHAFT

The same maximum rope speed of 1,100 ft. per minute, or 12 1/2 miles per hour, is provided as in the auxiliary hoisting shaft. The total lift is 860 ft.; the load in the skip is 15,000 lb.; the weight of the skip is 13,300 lb.; the diameter of the rope is 1 1/8 in., the  $WR^2$  of the drum is 700,000 lb. ft.<sup>2</sup> and that of the motor, which has a speed of 66 r.p.m., is 300,000 lb. ft.<sup>2</sup>

It must be admitted, of course, that the total load lifted is larger, as three times as much coal is raised per hoist, and the hoist must be of heavier construction, although the power consumption of course, is notably less for the skip-hoisting operation.

The hoist for handling these skips is of first-motion

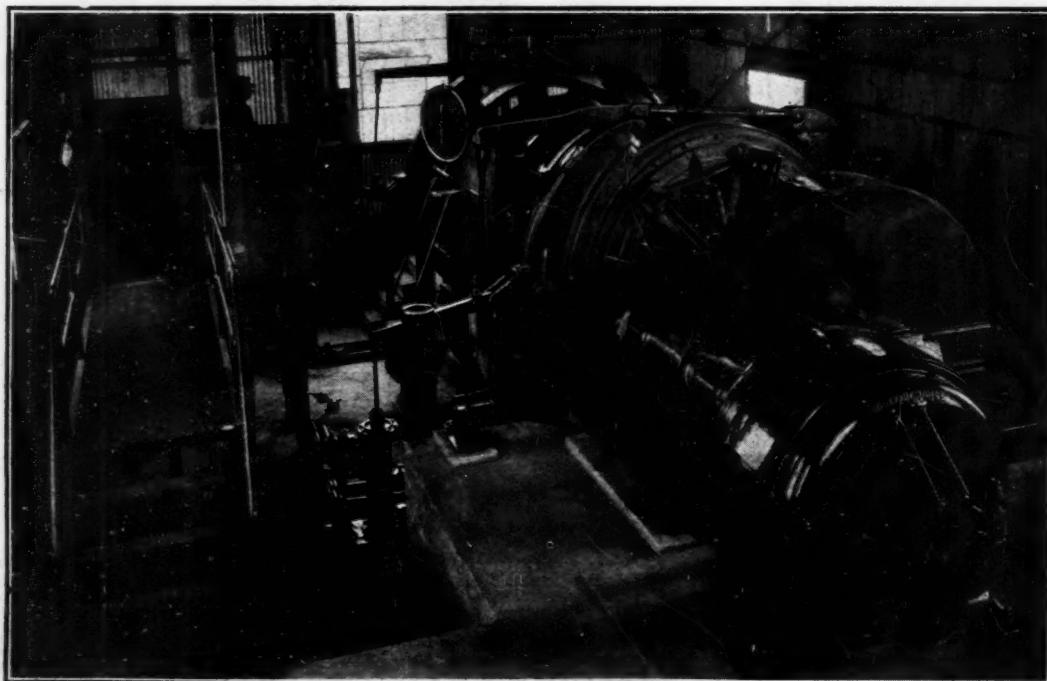


FIG. 11  
Auxiliary Shaft  
Hoist

This hoist has two 7-ft straight cylindrical drums, one of which is a loose drum. In consequence of this latter provision coal, men and material can be hoisted from more than one level. The loose drum is engaged to the shaft by means of a friction clutch operated by a hydraulic thrust cylinder with control levers placed on the operative's platform. The floor around the hoist is all on the drum-pit level, a convenient arrangement for access to the brake engines and control mechanism.

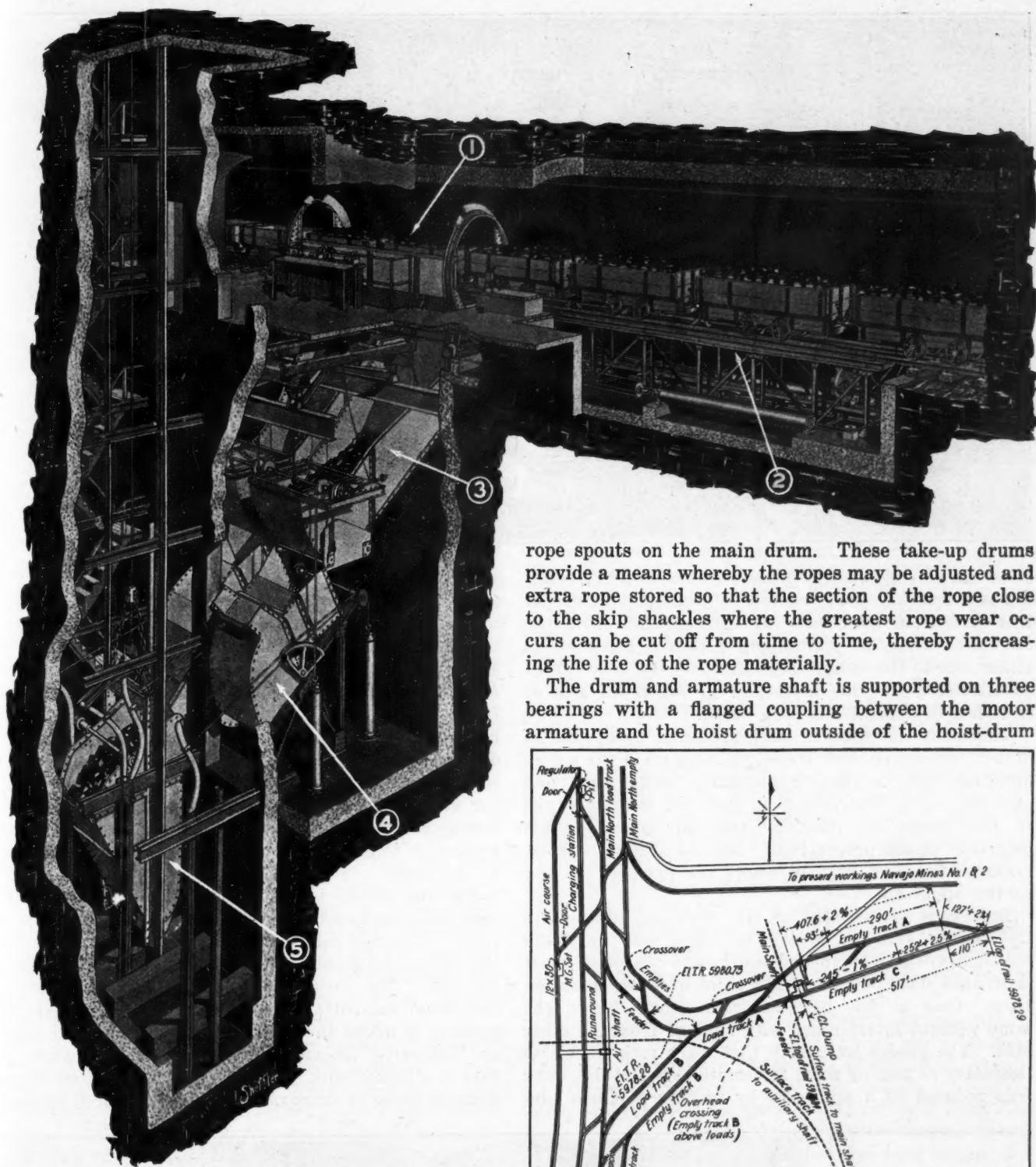


FIG. 13—DETAILS OF EQUIPMENT IN BOTTOM OF SHAFT

(1) Two-car rotary car dump which discharges cars without uncoupling. (2) Trip feeder which moves the trip two car lengths for each operation. (3) Two weigh hoppers, each of which holds and weighs a skip load, or three cars. (4) Two skip-loading hoppers which prevent spillage into the sump and (5) Two skips of the overturning type.

type, the motor being coupled directly to the drum shaft. The drum is of cylindro-conical shape with a small diameter of 7 ft. and a large diameter of 10 ft. 6 in. with groove arrangement for affording maximum hoisting efficiency.

The drum is equipped with a parallel-motion post brake 9-ft. in diameter with 11-in. face set by gravity and released by a hydraulic thrust cylinder actuated by oil under pressure. The drum also is equipped with two rope-adjusting drums placed outside the spiders, but in such a position that the ropes lead on from the

rope spouts on the main drum. These take-up drums provide a means whereby the ropes may be adjusted and extra rope stored so that the section of the rope close to the skip shackles where the greatest rope wear occurs can be cut off from time to time, thereby increasing the life of the rope materially.

The drum and armature shaft is supported on three bearings with a flanged coupling between the motor armature and the hoist drum outside of the hoist-drum

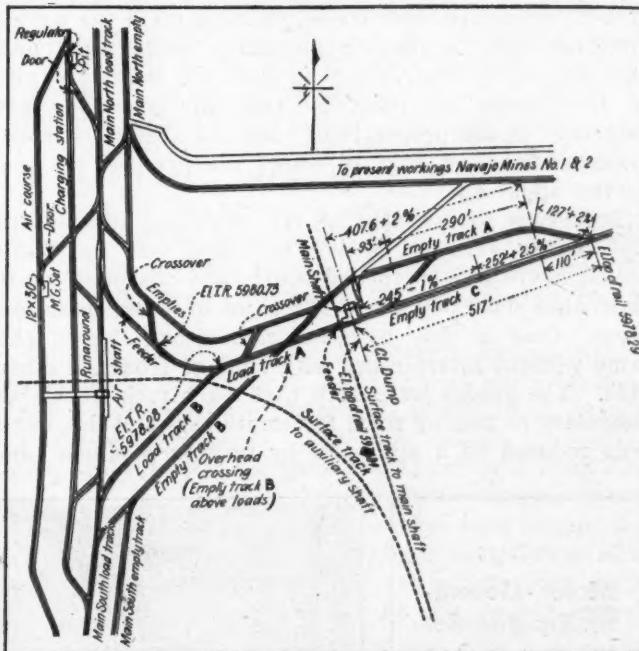


FIG. 14—LAYOUT OF MINE BOTTOM

The main-line locomotives enter by the main entries north and south delivering cars on load track A. After dumping they pass by gravity in continuous trip to empty track C. It is proposed to have a locomotive specially stationed at the bottom to deliver empty cars from track C to the main-line locomotives at the point where they have released their loaded trips.

bearing. Proper thrust bearings are provided to prevent lateral movement of the drum.

The hoist drum is driven by a 1,100-hp. direct-current motor, operated in conjunction with a flywheel motor-generator set and slip regulator and controlled by a modification of the Ward-Leonard system. This arrangement is provided so that the power input to the

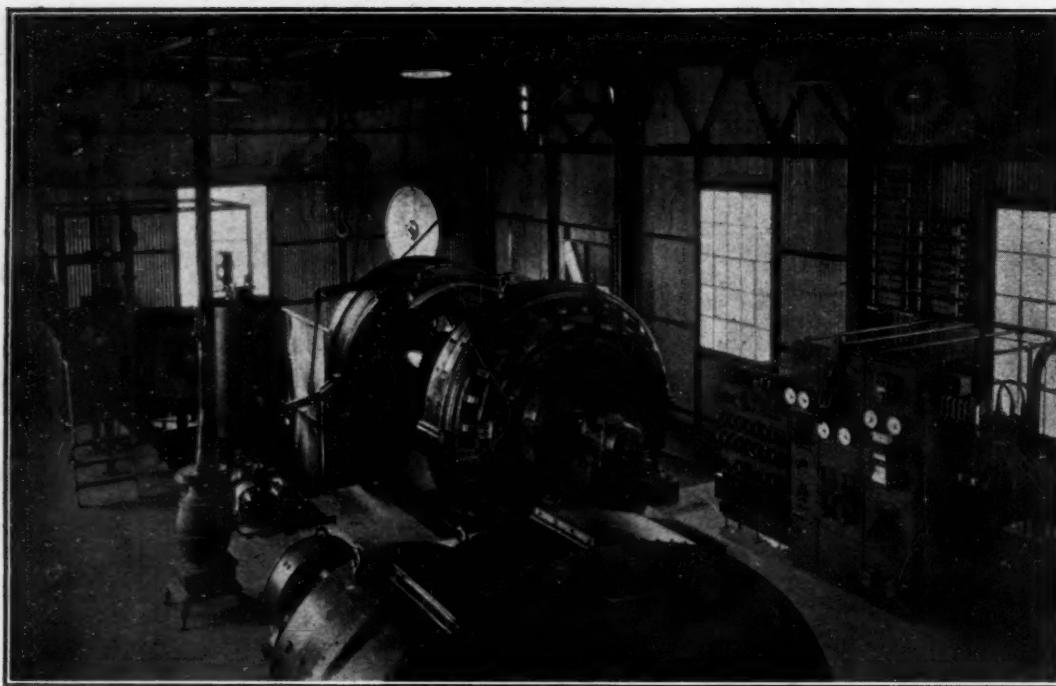


FIG. 15  
Main Hoist

A cylindro-conical drum is provided. The motor is direct-connected to the drum shaft. Devices are installed to prevent overspeeding, overtravel, and starting in the wrong direction. Automatic acceleration and automatic retardation are provided. Should the operator fail to slow down his hoist at the proper time the hoist attends to that duty automatically. The drum has two rope-adjusting drums placed outside the spiders. These take-up drums provide for the adjustment of the ropes and for extra rope whenever the ends receive their periodical cutting off.

hoist can be regulated to prevent excessive peaks being imposed upon the power source. With proper regulation this input can, when hoisting in accordance with the calculated cycle, be maintained within 5 per cent on either side of the mean. Fig. 12 shows the duty curves as calculated for this hoist and on which the size of electrical equipment has been based.

The hoist operation is fully protected by devices to prevent overspeed, over-travel, starting up in the wrong direction, and to provide automatic acceleration and also automatic retardation in case the operator fails to slow down the hoist by manually operating his controller at the proper time. Fig. 15 shows the hoist arrangement, and Fig. 16 shows the flywheel set and control apparatus.

Referring to the plan of the workings adjacent to the shafts, Fig. 14, it will be noted that the main haulageways are north and south, and the main shaft is located some 500 ft. to the right of these main entries. Coal is thus brought from either side of the mine without interference with haulage from the other side. The grades were such that much rock work was necessary in making room for empty cars and this work was reduced to a minimum by making a single run-

around for motors going in for empty cars.

Slopes have been driven from the main haulageway to the roadways in the old mines, and the coal from the old workings is gradually being diverted to the shaft operation. Grades up to 8 per cent are met in getting coal from these old workings but all are in favor of the loads. Rope hoists with electric drives have been in use for many years, whereas the advent of haulage motors is recent. Three 6-ton combination storage-battery and trolley motors are now being tested for gathering, and two 10-ton haulage motors are in service for the longer hauls. The new workings have grades up to 3 per cent but most of them are in favor of the loads.

The use of mining machines for undercutting this coal was abandoned several years ago after a thorough trial. The coal cut readily, but the difficulty was that the cutter frequently stuck, due to the squeezing of the coal. The entire seam appears to be in a strain, and when the cutter bar enters there is sufficient expansion to wedge the chain. The coal is defined locally as "explosive" because of this action, for when the face is attacked with a pick the coal immediately breaks down, making it comparatively easy to mine it by hand.

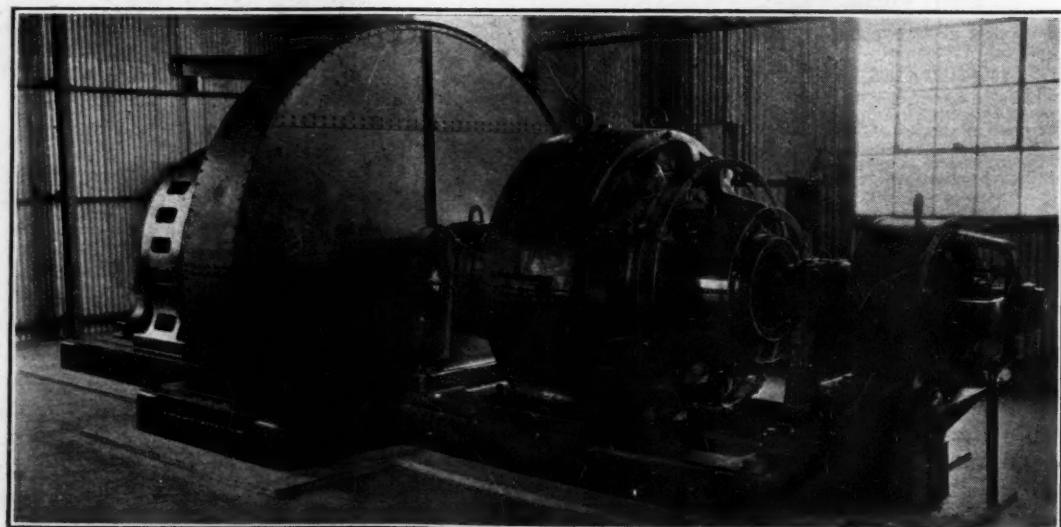


FIG. 16  
Motor-Generator Flywheel Set

The flywheel, which is protected and disguised by the steel cover, is 10 ft. in diameter and 22½ tons in weight. It runs at 700 r.p.m. and by reason of its great weight and high speed has sufficient energy to equalize the power input to the hoisting equipment.

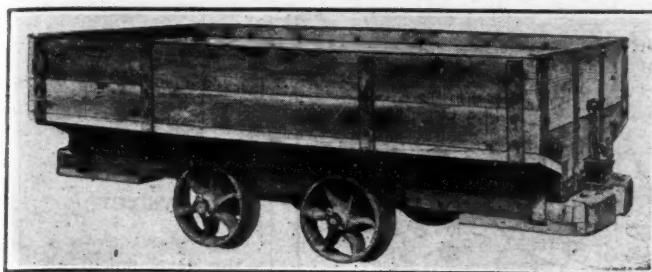


FIG. 17—SOLID-END MINE CAR

Side boards and ends are of  $1\frac{1}{4}$ -in. and bottom of 3-in. oak. The main carrying member is a  $8 \times \frac{3}{4}$ -in. Z-bar. The car has solid ends and all parts are thoroughly connected to the body irons.

The miners drill and load their own holes, but all shotfiring is done after the men leave the mine. Solid-end mine cars are used, the general design being shown in Fig. 17. Attention is called to the thorough manner in which the wood parts are held together. The entire car is really a steel skeleton with wood lining—in fact all the body irons could be assembled without using any of the wood parts for connecting them. Lincoln trucks are used with self-aligning roller bearings. The capacity of the car level full is 72 cu.ft.; the car bodies weigh 1,790 lb. and the trucks 890 lb.

## Important Position of Coal In Super-Power Plan

Demand for Power Increasing—Significance and Effects of Recent Advancement—Elimination of Waste—Coal Fields Main Source of Power

BY EDGAR J. GEALY

Electrical Engineer; Associate Editor, *Coal Age*

**V**IEWING the steady march of progress one need not be a far-reaching expert or dreamy visionary to believe that recently proposed super-power systems are already under way. Increasing demand for greater electrical energy has necessitated the installation of greater power plants, larger distributing systems and made necessary increased economy in the generation and transmission of power.

One of the most far-reaching conceptions of modern times is shown in the map prepared by Frank G. Baum, hydro-electric engineer, which depicts a super-power system projected to cover practically all of the United States and Canada. The plan would make available to the entire nation and Canada the combined resources of water power and coal, and at the same time provide the maximum amount of power at the lowest cost, distribute it to the largest number of people, and most effectively conserve our resources.

Such a system of development is both practical and highly desirable. A nation's standing in the scale of modern civilization may be fairly measured by the extent to which it is utilizing its natural sources of power. Increased use of mechanical and electrical power releases human energy for higher application.

Electrical development has now become a direct criterion of the progress of our nation. Fully one-half the world's natural power supply is converted into electrical form before it is finally utilized. This is because electricity frequently is the cheapest and most convenient form in which to transmit and utilize power.

Recent developments have made it possible to deliver

power over distances of 400 or even 600 miles with high efficiency. Transmission lines are successfully operating on 220,000 volts. Transmission voltage like this has many advantages that are highly desirable for long-distance transmission of power. Doubling the voltage of a transmission line makes possible the transmission of four times as much power with about the same efficiency and voltage drop. It also involves the expenditure of far less capital than that required for two parallel power lines that could carry only half the amount of energy at 110,000 volts.

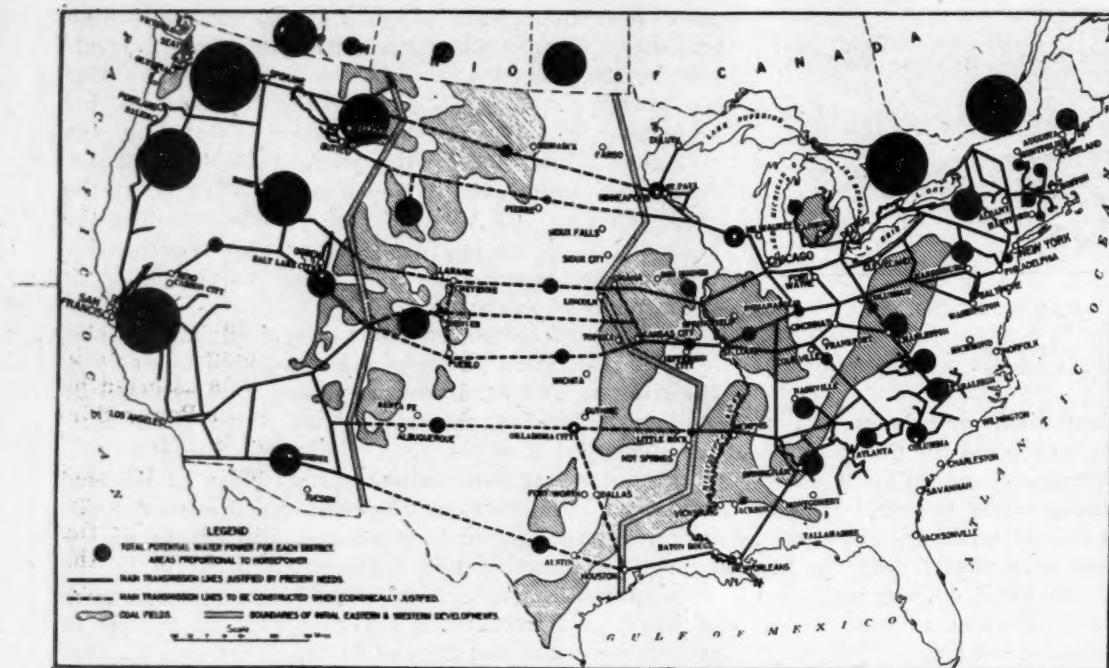
A saving of 158,000,000 tons of coal annually is possible by utilization of the power now going to waste in the Niagara and St. Lawrence rivers, it is asserted by William S. Murray, chairman of the Super-Power Survey Commission of the U. S. Geological Survey.

What does the super-power system mean to the coal industry? For years it has been the dream of engineers that coal would be converted into energy at the point of production and transmitted to users in the form of electric power, and possibly some in the form of gas. Until recently it appeared that the saving in transmitting current instead of transporting coal over a hundred to two hundred miles was not sufficient to warrant the heavy initial investment required to set up power plants and transmission lines, nor was the extent of the territory served large enough to make the project practical. But with the extension of the power-carrying facilities to a 600-mile limit new possibilities are immediately opened up.

Under the present plan large amounts of coal are transported long distances, being handled and rehandled, lost and broken, entailing great expense and waste. On arriving at its place of consumption much of it is used in the generation of electrical energy; frequently it is burned in uneconomic boiler plants by old and inefficient methods, thus resulting in additional losses and waste. This uneconomic conversion of latent coal energy into electrical energy goes on and until some plan of unification is devised and effected will continue to go on wastefully. At most of these plants the loss is on such a relatively small unit quantity that no one seems to realize the gigantic aggregate waste.

Conservation of our national resources is imperative; waste in industry must be reduced to as low a value as possible. No doubt when today's resources of energy are depleted posterity will have solved its problems; progress will be made no matter how great the task. But, nevertheless, it behooves us—and no doubt it is the problem of our generation—to utilize our power resources to the greatest advantage and with the highest economies, because by so doing we not alone conserve our resources but release our present wasted energies for higher development and use.

The super-power plan system cannot fully develop without the assistance of our coal fields. It is asserted that the full development of all our water-power sites for the manufacture of energy would replace only about half that produced through the consumption of coal today. Few realize the compact latent energy in coal, as revealed in comparing the quantities of water and coal necessary to generate a given amount of electrical energy. At the hydro-electric plant it requires the fall of about 26,000 lb. of water per hour from a height of 100 ft. to produce a horse-power-hour of electrical energy; with coal it requires the burning of 1.5 lb. per hour to produce an equal quantity of electrical energy.



In other words a 3-in. cube of coal—which could readily be held in the palm of one's hand—can be burned to accomplish as much work as a horse can do in an hour.

A difficulty which has long stood in the way of conversion of coal into electricity at the mines is the question of railroad freight. Power at the mine is of no value; it must be carried to the factory where it is to be used. At present this work of transporting power is done by the railroads by freight cars. This is an important source of revenue to the railroads. Yet, with our railroad equipment greatly overtaxed, enormous waste and loss of coal in transportation, high labor charges in handling coal, increased facilities for the economic conversion of coal into electrical energy and improved methods of electrical transmission it appears that the urgency of the problem demands serious con-

sideration. It has been pointed out that transmission lines could be built on the railroad right-of-way, where leases for transmission lines probably would make up in large part for the loss in revenue from coal. Electrification of the railroads would be rendered more simple, thus making increased economies possible. And the normal increase of other items of freight would make up for the decrease in coal shipments.

The extensive program of tying into one great system all the electric power systems of the country is timely, as it is becoming increasingly more necessary. As the river, railroad and highway systems are the transportation arteries of the country so should the power plants be linked together to be the muscles of power for the further development and progress of the farms, factories, and mines.

### Pennsylvania State College Provides Extension Classes in Coal Mining

IN ORDER to provide men in and around the coal mines of Pennsylvania with facilities for studying mining the State Department of Public Instruction, the State Department of Mines and the School of Mines of the Pennsylvania State College undertake to assist groups of persons in the various communities of the coal-mining regions in obtaining that kind of instruction. Classes may be promoted by the persons who desire the instruction. How they should proceed to obtain it is outlined as follows:

When twenty or more men in a mining town wish to form a class for instruction in mining subjects they should request the school board of the school district in which they reside to conduct an evening class in mining for them, and notify the State Department of Public Instruction, Harrisburg, Pa., of their request.

If the school board, after due consideration, finds that an evening class in mining is desirable for the community, it will open such a class in one of the local schoolhouses or other convenient place. This class will be operated by the school district, and no tuition will be charged residents of the district.

If an evening class in mining is desirable, the school board may receive assistance in organizing such a class from the State Department of Public Instruction. Ar-

rangements are also possible whereby the school board and the State Department of Public Instruction will jointly bear the expense of the instruction. The state law provides that the State Department of Public Instruction may reimburse the school district to the extent of two-thirds of the salary of a teacher of an approved mining class.

The teacher training department of the Pennsylvania State College is prepared to train and to recommend to the State Department of Public Instruction for certification competent teachers for evening classes in mining subjects. After the teacher has been appointed, lesson material in printed form will be furnished at the cost of printing by the School of Mines of the Pennsylvania State College.

The teacher-training officers connected with the School of Mines of the Pennsylvania State College will visit, for the purpose of teacher training, classes which are organized in accordance with the above plan. Officers of the Pennsylvania Department of Public Instruction will inspect and supervise the said classes for the purpose of approval and reimbursement on the part of the state.

Classes usually will begin in October or November and continue throughout the winter. They will be held in the evenings once or twice a week or at such times as may be locally agreed upon. Instruction should extend for a period of not less than sixty hours per year.

### Suggested Super-Power System

The plan involves the development of unit districts which would later be interconnected and expanded to stretch across the continent. Water-power sites would generate large volumes of energy which would be combined with generating plants located at the mines.

## Group Insurance: What It Is and Its Advantages To Employer and Employee

Save in Two States No Medical or Physical Examination  
Is Necessary—Many Unable to Obtain Individual Insurance  
Get It Through Group Plan—Tends to Increase Production

BY R. W. SPARKS

OVER 2,500 years ago Aesop told a tale of how four oxen in a field repeatedly protected themselves from the attack of a lion who frequented their pasture by standing with their four tails together so that no matter from what direction the lion attacked he was met by a pair of horns. One day the oxen fell to quarreling among themselves and their defense was immediately destroyed, whereupon the lion killed and ate them one at a time.

Today we are still learning that in the long run the best course is unity and co-operation. Efforts are being made every day to bring about a closer tie between employer and employee, for therein lies the basis of successful co-operation in industry.

The sun has rapidly been sinking on the day of shirt-sleeve intimacy. While there are still a small number of concerns in the country where the owner can walk through the plant without his coat and say "Morning, Joe," or "Howdy, Frank," to his men, they are gradually being displaced by big business. Big business has wiped out most of this spirit of fellowship and good feeling and replaced it with the idea on the part of the men that the "big chief" is some kind of an individual who wears strange clothes and has a black string hanging from his eyeglasses and that to "put anything over" on him and get away with it is legitimate.

### INTEREST SHOWN WORKER IS RECIPROCATED

About ten years ago group insurance began to make itself heard as a means of stabilizing labor and improving the employee's general attitude toward his work. By promoting unity and co-operation it tends to increase production; in fact it has been one of the most effective of the efforts made in many plants to bring back the "good old-fashioned" spirit. While providing protection to the worker's home and family it at the same time gives tangible evidence that the employer is interested in the things closest to his workers.

Whether an employer purchase group insurance for business reasons, such as reducing labor turnover, or because he wishes to be a benefactor of society, the benefit will be felt in both directions. But the advantages of group insurance are not restricted to the shop, for when the family of the worker become acquainted with the plan they realize how closely they are concerned in its benefits and their interest soon results in active support. Internal dissension in the plant often is stirred up by radical minds, and to have the home on the employer's side is to have a powerful ally.

*What Group Insurance Is.*—Group insurance is a quantity-purchase proposition. By purchasing insurance protection for all or any division of his employees numbering fifty or more an employer is quoted group

rates that are considerably lower than the rates for individual policies of equal size.

One blanket policy is issued to the employer, and individual certificates are presented to the employees protected. The employee has the privilege of naming his own beneficiary and he also may change the beneficiary he has named if occasion requires it.

One of the attractive features of group life insurance is that except in the States of Georgia and Oklahoma no medical or physical examination is required. The only stipulation from the physical standpoint is that the employee be actively at work upon the day the insurance goes into effect. If for any reason an employee is not able to be at work upon the date the insurance becomes effective, he is entitled to his certificate upon his return to active service. Age limits are entirely ignored by this clause. The man who is too old to get insurance is taken in along with the younger members of a concern and receives his protection without question.

Insurance records show that approximately 20 per cent of all people applying for life insurance are rejected because of inability to pass the required physical examination. These figures are based on all applicants and as the so-called white-collar workers are more numerous in this list than men of industry, it is reasonable to assume that this percentage would be considerably higher among industrial workers. Thus people who could not get life insurance protection individually are enabled to get it through group insurance.

Over 40 per cent of the working people carry no insurance protection, and their widows, children and mothers are often left destitute, an object of the employer's, or of public charity. Experience shows that over 50 per cent of the group insurance claims paid go to relieve direct distress.

### INDIVIDUAL SELECTION OF EMPLOYEES UNLAWFUL

*Group Plans.*—Individual selection of employees for different amounts of insurance under the group plan is prohibited by law. There must be a definite schedule. These schedules have gradually worked themselves into three different classes known as the flat amount, salary, and length of service schedule.

As its name indicates, the flat-amount basis places an equal amount of insurance upon all employees.

The salary schedule divides the employees into different classes according to their yearly earnings, and places a different amount upon each class. For example, all employees earning \$1,000 per year or less may receive a \$1,000 certificate, those whose yearly salaries are over \$1,000 but less than \$2,000 to receive a \$2,000 certificate, and those making over \$2,000 could receive a \$3,000 certificate.

The length-of-service form has proved very popular

because of its increasing rewards to employees remaining with the company for a long period of time. The length-of-service idea is carried out in the following manner: A certificate may be issued to an employee for the starting amount, say \$500, three months after he joins the working force. To this original certificate is added the sum of \$250 upon his first anniversary with the company; after he has been with the organization two years his insurance will be increased to \$1,000, and so on, giving him a \$250 increase every year until he is receiving the maximum amount set by the company.

*Minimum and Maximum.*—The above examples are not arbitrary. Interesting combinations have been worked out to fit unusual conditions. The minimum amount of insurance that can be placed upon any individual under the group plan is \$500. The maximum may rise to \$5,000. Any amounts within these limits can be established for the flat amounts. On the salary and length of service basis the amounts for the different classes or the size of the increase can be fixed according to the wishes of the purchaser.

*Probationary Period.*—It is customary to enforce a probationary or waiting period before new employees participate in the plan. This period usually runs from three to six months although in many cases local conditions indicate that a shorter or longer period might be desirable. The waiting period is particularly effective where the industry has been in the habit of supporting a large floating element. An employer is reasonably sure that the new worker is not of the migratory type if he has remained with him six months or a year, and the period can be established so that the insurance can go into effect after that time.

*Permanent Disability.*—In the back of the minds of nearly every workman there lurks a constant dread of the possibility of being entirely deprived of his earning capacity, but the worker protected by group insurance need waste no worry thinking "What will become of me and my family should something happen to me and I be no longer able to earn my living." For the group insurance certificates guarantee to pay the entire amount of the insurance in cash instalments to any worker who becomes totally and permanently disabled before reaching the age of sixty.

#### ON LEAVING COMPANY CAN RENEW INSURANCE

*Continuance Privilege.*—When an employee leaves a concern carrying group insurance, that employee's insurance is immediately and automatically cancelled, but he has the privilege of converting into any standard life insurance policy at regular market rates for his attained age without physical examination by applying to the insurance company within a certain prescribed time after he leaves his employer.

*Cost.*—Individual certificates are issued to employees protected by group insurance at a cost to the employer of approximately 40 per cent less than what an equal amount of insurance would cost the worker in the open market. Furthermore the worker could only receive insurance he purchased himself provided he could pass the physical examination required by insurance companies.

Group insurance can be carried by the insurance companies at a more moderate rate than individual policies because the blanket policy form cuts down administrative expense. As there is little administration by the insurance company there is even less clerical detail incurred by the purchaser of a group policy.

Employees leaving an organization usually are offset by new ones taken on and in this way the new applications and the cancellations offset each other.

Further simplification has resulted from the fact that practically all transactions are based on an average cost worked out when the contract is installed. This eliminates different amounts for various ages. Furthermore, the usual technicalities connected with the paying of insurance claims have been eliminated. No affidavits or proof beyond the employer's and the physician's statement are required.

The insurance company carrying the group insurance usually furnishes the policyholder with a card file index, and complete card record of the group. Many companies are using this outfit for their own personal records. Some have had no such records before.

#### LITTLE CLERICAL WORK REQUIRED OF COMPANY

Average cases have been worked out and it has been found that one clerk can handle all the clerical detail for a group of 100 in one to two hours, 250 in three to four hours, 500 in less than one day a month, 1,000 in a day, 5,000 in three or four days a month.

Group life insurance has no connection with workmen's compensation insurance. It affects it in no way, and its benefits are entirely in addition to it.

To show that there is nothing experimental about group life insurance a few facts may be given. The Metropolitan Life Insurance Co., only one of several big writers of this kind of insurance, has more than fifteen hundred companies insured under this plan. Nearly half a million workers enjoy group life insurance protection from this company alone.

The records of this company indicate that group insurance is popular with coal operators. Over five years ago it had not placed its group insurance with a single coal company. Since then about seventy coal concerns have been insured and the protection now covers more than 20,000 employees of coal mines. Not a single coal company has ever cancelled its contract with the Metropolitan Life Insurance Company because of dissatisfaction.

*Factor in Public Opinion.*—The attitude of the employees toward the company that employs them is a factor in guiding public opinion. Huge sums of money are spent every year by large employers of labor to create favorable public opinion. This effort often is counteracted, especially in the locality of the concern and its branches, by the impulsive propaganda of dissatisfied employees. The comment, conversation and spirit of the employee who is quick to rise to the defense of his company whenever he discovers an attack, direct or indirect, is something whose value is multiplied as many times as there are satisfied employees on the payroll.

*Other Benefits.*—The cost of production is made up of many elements. Material, wages and overhead costs are generally well known. In many efficient institutions the money expended in training an employee for his work has been carefully worked out and there is no doubt that it is a considerable figure. Every time an old employee leaves, the cost of training a new one to fulfill his place increases the production cost. When Herbert Hoover's committee which investigated waste in industry published its report in a book called "Waste in Industry" some time ago startling evidence was produced revealing the enormous amount of money lost as a result of poor workmanship and the production of damaged goods by poorly trained employees.

Further than this, there is a waste that is practically impossible to compute, due to employees not working as efficiently or conscientiously as they are capable. While this last can hardly be figured, we all appreciate the gigantic size that it reaches. Often it is due to a lack of understanding between workers and employers.

By bringing about a sympathetic understanding between the company and its employees, group insurance tends to increase production. By furnishing an attractive incentive for employees to remain where they are fairly treated, group insurance exerts a strong tendency toward stabilizing labor conditions, and thereby assist in reducing the cost of production.

The relative extent of labor turnover is determined more, perhaps, by the length of service of the employee than by any other single factor. Men who have been working harmoniously together over an extended length of time learn to understand each other and the principles of team-work and *esprit de corps* are thereby fostered.

### With Track Shifter One Man Can Raise and Throw Over Railroad Track

MUCH has been written as to the efficiency with which distant-removal stripping is done in the iron regions, using the largest dump cars and heavy standard-gage track. The work furnishes an excellent illustration of what might be done in the stripping of anthracite. How to dump is as much a part of the "trick" of such stripping as how to load and to transport the overburden. In the Mesabi region not only the overburden must be dumped but the siliceous streaks of ore, known as "paint rock." This is placed in a separate pile, as it may become valuable. Prominent objects in the featureless scenery are the many low mounds of overburden and paint rock.

In the City of Duluth the Lake Superior Loader Co. is making a track lifter and shifter which enables one man to raise the track, ties and all, and move it over if desired, all in one operation. Its availability for distant-removal stripping in the anthracite region and elsewhere is evident. Of course the track when raised needs to be underpinned and consequently the track-shifter is equipped so that it will transport eight men and their tools. As will be noted from the illustration, the machine moves and operates under its own power. It will travel at a speed of 30 miles per hour on a level track and 20 miles an hour up an adverse grade of 4 per cent.

The machine, when shifting, is made to plant a heavily shod leg or "spud" on the track, the leg being inclined at an angle so that when the shifter is caused to climb

it, bringing the rail with it, it tends to fall toward the edge of the dump, dragging the track in the same direction. The climbing mechanism is a toothed wheel which engages a rack in the side of the shifter leg. The action is somewhat like that of a vaulter who uses a pole to aid him in his flight.

The track is seized by four rail clamps suspended from the shifting truck. These are stationed on either side of the shifter leg and between the wheels of the machine. The track is not broken at any of the joints but is lifted and shifted without any such provision. When one shift has been made, the shifter moves under its own power backward or forward two rail lengths and there repeats the operation. The claim is made that the number of men needed to make the shift is cut down one-half and the time consumed 75 per cent. Thus the work of the shovels is not impeded. It is said that the rail is not kinked nor the tie plates bent.

By planting the spud in the center line of the track and in a vertical position the track is not swung from line but is lifted vertically. Where the track is buried or frozen it is best to use the shifter to lift the track from its position for a few rail lengths. Then the shifter can be readjusted and run back over the same track length, shifting it into place as already described. The power is provided by a gasoline engine mounted in front of the truck. The lifting force is 25 tons and the machine is 10 ft. in length, 7 ft. wide and 8 ft. high. The length of the spud is 7 ft. The shifter weighs 4,900 lb.

### Upkeep of Steam Shovels Engaged in Stripping and Loading

THE following records are from a book on "Upkeep Costs" compiled by the Erie Steam Shovel Co.:

Operating Company	Mine	Yardage	Material	Upkeep in hundredths of a cent per cubic yard.	Upkeep Cents per day
Commonwealth Fuel Co.	Douglas	156,000	Clay & Gravel	14	
Ocala Lime Co.	Ocala, Fla.	900,571	Coal		
		190,000	Rock		
		90,000	Earth		
		179,856	Rock		
		57,332	Earth		
Kennedy Refractories Co.	Tiffin, Ohio	10,000	Coal	43	
		3,000	Iron Ore		
		18,486	Earth		
Gay & Hays	Greensburg, Pa.	59,156	Shale	5	27
		55,458	Coal		
Vielhauer Coal Co.	Dover, Ohio	300,000	Earth & Shale	5	29
Keystone Limestone Co.	Millville, W. Va.	200,403	Shallow Earth with rough rock bottom.	20	57
		139,000	Earth		
Penn. Products Co.	Dillsburg, Pa.	138,000	Frosted Earth, Rock and Hardpan	60	25

It should be noted that all these shovels are of small to medium size.

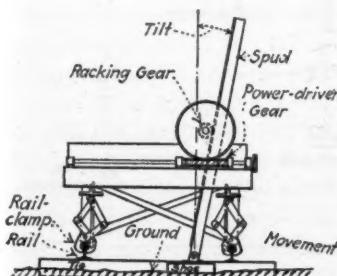


FIG. 1—PREPARE TO SHIFT

Spud is tilted over and the shoe set between ties, the clamps having been adjusted so as to seize the rails and lift them.

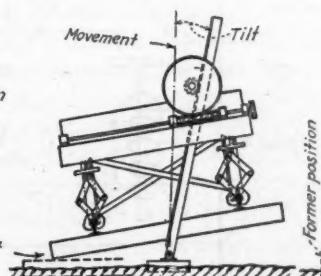


FIG. 2—LIFT AND SHIFT

Tie has been tilted and is being moved by gravity to right, one end dragging almost along the ground.

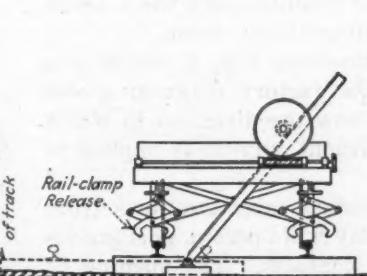


FIG. 3—READY TO GO FORWARD

The tie has been moved half the track width. The track clamps are released. Note the slope of the spud. The track is now ready for ballasting.

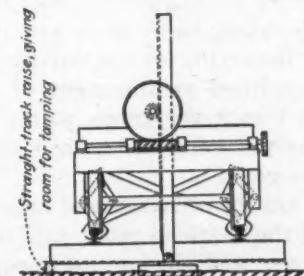


FIG. 4—RAISING TRACK

Spud in this case is kept plumb and set at track center, causing track to rise without side motion.

## New Equipment

### Automatic Sectionalizing Contactor for Trolley and Feeder Circuits in Mines

RELATIVELY new type of sectionalizing contactor giving automatic circuit-breaker protection, time delay and lockout features generally required in mining service has just been brought out.

It is designed for application between feeder or trolley sections and prevents an interchange of excessive amounts of current between the sections which it connects. It is fully automatic, opening on overloads and reclosing only when the potential difference between the sections is sufficiently small to limit the flow of current on reclosure to less than the overload setting of the relay.

The equipment, which is assembled on the slate panel in the box shown in Fig. 1 consists of the following apparatus: main contactor, overload relay, holding relay, snap switch, fuses, resistor and terminals. The contactor is of proved design and construction having arc chutes and magnetic blow-out coils, features highly desirable for this service. The overload and holding

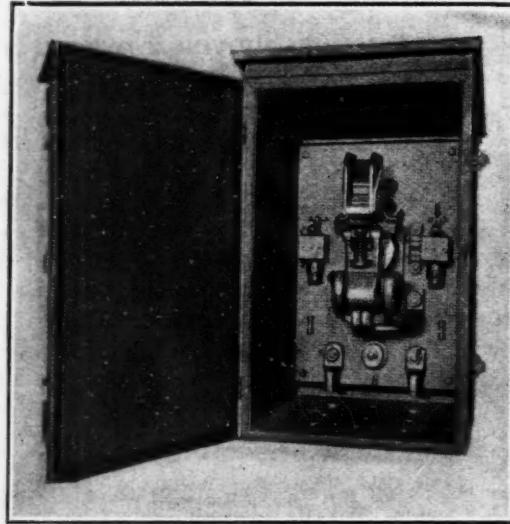


FIG. 1—AUTOMATIC CONTACTOR ENCLOSED

This device gives automatic-circuit breaker protection, reset and time-delay features. Enclosed in a box it may be locked and will perform without any further control equipment or devices.

relays are similar except for the coils—and are simple and reliable in operation. The overload relay has a series overload coil, while the holding relay has a shunt operating coil. Both are automatically reset.

Referring to the wiring diagram, Fig. 3, which is a simplified arrangement of the factory diagram shown in Fig. 2, the arrow points show the direction in which the plungers move when sufficient current is applied to the coils.

On the occurrence of an overload exceeding the setting of the overload relay, this relay will operate, opening its lower and closing its upper contacts. The opening of the lower contacts de-energizes the operating coil of the main contactor, causing the contactor to open. At the same time the closing of the upper contacts energizes the coil of the holding relay, causing this, in turn, to open its contacts.

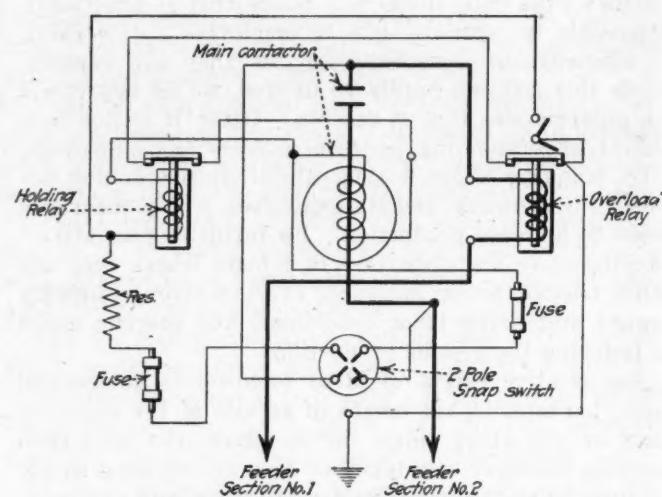


FIG. 2—FACTORY WIRING DIAGRAM

The wiring diagram shows the relative location of the equipment illustrated in Fig. 1, showing the interconnections between the control devices.

When the main contactor opens, the overload relay is de-energized and immediately resets. If the voltage difference between the two feeder sections—the voltage across the contactor—exceeds a given minimum, the holding relay will remain energized, as its coil—with resistance in series—is connected directly across the contactor, thus preventing the contactor from reclosing.

When the voltage difference drops below the minimum value, however, the holding relay is de-energized and causes the contactor to reclose. This feature prevents the reclosure of the contactor unless it is safe to do so: that is, if it does reclose, the current flow from section 1 to section 2 will not exceed the overload setting of the relay and cause the contactor to reopen immediately. In this way sections of feeders on which faults occur, may be cut off from other sections automatically, and later be automatically reconnected as soon as the fault is cleared and voltage properly re-established on the line.

These sectionalizing contactors which are manufactured by the Westinghouse Electric & Manufacturing Co., are made in various sizes up to 1,250 amp. for either 275 or 600-volt service. The relays have wide ranges of settings so as to trip the contactor at any desired load and re-establish service with any desired percentage of dead load floating on the line when the contactor is open. For special conditions the company has worked out many applications for this contactor with a few changes in the circuits or the adaptation of additional relays.

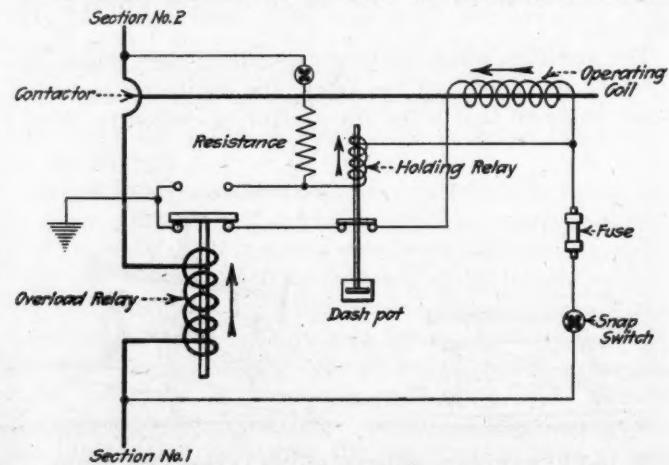
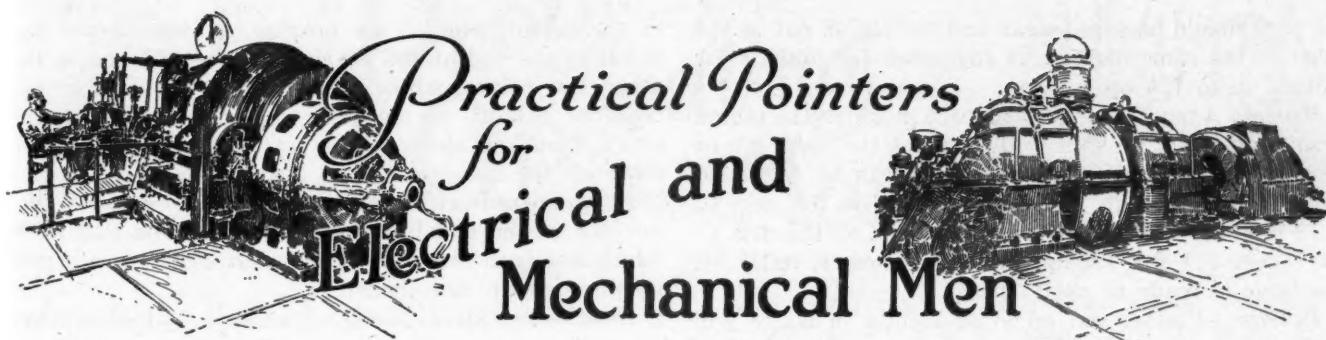


FIG. 3—SIMPLIFIED WIRING DIAGRAM

The operation of the contactor may be readily understood by making reference to the text. The raising of the plunger in the overload coil opens the circuit through the operating coil and opens the contactor. Then the holding relay functions to lock out the contactor until it is safe to re-establish service.



# Practical Pointers for Electrical and Mechanical Men

## Putting Pinions on Mine Type Locomotive Armatures

MANY of the pinion failures on electric mine motors are caused by putting the pinions on incorrectly.

**Driving a Pinion.**—It is generally believed that if a pinion is shoved on the shaft and the nut tightened, it will run satisfactorily without loosening. Experience has shown that in order to obtain satisfactory operation, pinions should drive their gears through the "press fit" or "shrink fit" on the shaft and not through the key. The key acts merely as a safety device if the pinion should accidentally loosen. The desired fit for the pinion can be had by heating or by pressing.

**Precautions.**—The following points should be observed when putting pinions on railway motor shafts with taper fit:

(1) The shaft should be clean and free from burrs or swellings.

(2) The pinion bore should be clean and free from burrs.

(3) The fit of the pinion bore should be in contact with at least three-quarters of the surface of the taper fit on the shaft. This can be checked by rubbing Prussian blue, thin red lead and oil, or thin lamp black and oil on the pinion bore and fitting it on the shaft.

(4) After the above points have been taken care of, the pinions should be put on the shaft cold to make sure (a) That the keyway in the pinion is the proper size for the key mounted on the shaft; (b) That the pinion does not ride or bind on the top and sides of the key and will not ride the key when pressed further on.

The keyway on the pinion can be 0.002 in. larger, but not less than the key. There should be at least  $\frac{1}{16}$  in. clearance between the top of the key and the bottom of the keyway in the pinion. The corners of the key should not cut into the fillet of the keyway. To prevent this the corners of the key should be rounded.

### PRESSURES FOR PUTTING ON PINIONS

**Pressing on Pinions.**—Pinions can be pressed cold onto the shaft with a wheel press. The pressure required will be 12 to 25 tons for pinions up to 125 hp. and 40 to 80 tons for pinions transmitting 125 hp. or over. A 25-to 50-ton press can be used for pinions up to 125 hp. and a 100-ton press for pinions above 125 hp. Pinions with bores up to 3 in. that are pressed on cold should advance on the shaft approximately  $\frac{1}{32}$  in.; those with 3- to 4-in. bore,  $\frac{1}{16}$  in., and those with 4- to  $5\frac{1}{2}$ -in. bore,  $\frac{1}{8}$  in. This distance is measured from the point where the pinion is seated firmly on the shaft before pressing.

**Heating Pinions for Motors Up to 125 hp.**—Pinions up to three inch bore should be heated in boiling water for 30 minutes, and those with 3-in. or larger bore for

60 minutes. When the pinion has attained the temperature of the boiling water, namely 100 deg. C. (212 deg. F.), it should be taken out of the water and the bore quickly wiped clean. Without allowing the pinion time to cool, it should be tapped on the shaft with a 6- or 8-lb. sledgehammer, using a heavy piece of wood or copper between the pinion and the hammer. This sledging is not to get a driving fit but to make sure that the pinion is home and well seated. Three or four taps evenly distributed around the pinion end should be enough. The pinion nut with lock washer can then be screwed home tight with a wrench having a purchase or lever arm of 3 or 4 ft.

A suitable pinion heating arrangement is shown in Fig. 1, the water being heated by an electric heater. A gas flame or a steam coil, however, could be used instead. To prevent rusting and to insure a clean surface at the fit, washing soda should be added to the water in the proportion of  $\frac{1}{4}$  lb. of soda to 5 gallons of water.

**Heating Pinions for Motors Over 125 Hp.**—The pinions should be heated with a gas flame applied in the bore of the pinion in such a manner as not to touch the teeth of the pinion, as this might affect the temper. The flame should be so regulated as to take 45 to 75 minutes to bring the pinion to a temperature of 125 to 150 deg. C. (257 to 302 deg. F.). The temperature can be measured by placing the bulb of a thermometer against the pinion between the teeth. The surface of the pinion where the bulb touches it must be made perfectly clean by rubbing with emery cloth. It also is important to protect the exposed part of the thermometer by covering it with asbestos cloth so that the flame cannot touch the thermometer.

When the pinion has reached the correct temperature

Pinion Heating Tank

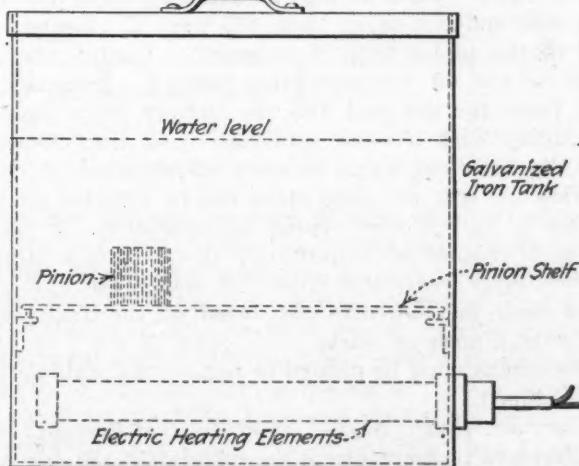


FIG. 1—ELECTRICALLY HEATED PINION HEATING TANK

An electrically heated tank can be used with the greatest success owing to the ease with which the heat may be controlled.

the bore should be wiped clean and the pinion put on the shaft in the same manner as suggested for pinions for motors up to 125 hp.

*Heating Apparatus.*—Any furnace in which the pinion is so located that the flame cannot touch the teeth can be used for heating pinions. The flame can be regulated and the pinions kept at a temperature of 100 deg. C. (212 deg. F.) for pinions up to 125 hp., or 125 deg. C. (257 deg. F.) for 125-hp. motors or larger, until the mechanic is ready to apply them.

*Results.*—Pinions put on after boiling in water will hold when cool with a pressure of from 12 to 25 tons, and those heated above 125 deg. C. and not more than 150 deg. C. with a pressure of from 40 to 80 tons, depending on the length of fit of pinion and the diameter of the bore. By following these directions it is possible to put pinions on armature shafts that will stay put and drive through their fit under the very hardest pulling from the motor.

### How to Babbitt Motor Bearings

**T**o CLEAN cast iron, malleable iron or cast steel shells (untinned) remove all the old lining from the shell. This may be done by heating the shell sufficiently to melt out the old lining. Remove all oil, dirt or other foreign matter by dipping the shell in a solution of caustic potash or by burning. If the burning method is used, continue the burning until all smoke ceases, showing that all oil and dirt have been burned off; then scrape the surface with a file and rub down with coarse sandpaper to remove all scale and oxide.

*Bronze, Pipe or Steel Shells (Untinned).*—Remove the old lining by heating, preferably in a pot of scrap babbitt, and be sure not to heat above 375 deg. C. As soon as the old lining is melted out, swab the tinned surface with zinc chloride (a saturated solution of zinc in hydrochloric acid), then dip into a pot of "half and half" solder, which should be kept at a temperature not less than 340 deg. C. and not more than 375 deg. C. If shells are to be babbitted immediately, do not touch tinned surface after removing from the solder pot. If the shells are to be allowed to cool, brush off the tinned surface with a piece of clean waste.

*Tinning Bronze or Steel Shells.*—Paint with a thin mixture of graphite and water the parts not to be tinned. When dry swab with zinc chloride the parts to be tinned, then dip the shell into a pot of "half and half" solder, which should be kept at a temperature not less than 340 and not more than 375 deg. C. Leave the shell in the solder until it is just hot enough for the solder to run off, leaving a thin coating. Remove the shell from the pot and rub the surface to be coated thoroughly with a swab saturated with zinc chloride, then dip in solder again to wash off all traces of zinc chloride. If any untinned spots can be detected on the surface to be babbitted repeat the operation. If shells are to be babbitted immediately do not touch tinned surface after removing from the solder pot. If the shells are to be allowed to cool, brush off the tinned surface with a piece of waste.

Steel shells must be pickled to remove the scale before being tinned.

*Iron or Steel Shells (Untinned).*—Preheat the mandrel to a temperature of approximately 150 deg. and the shell to 100 deg. C. If the shell is heated too much, the length of time for cooling may be so prolonged that the heavier metals in the babbitt will have time to settle

to the bottom end of the bearing, in which case the metal in one end of the bearing will be soft and in the other end brittle, while if the shell is too cold it will cool the babbitt too suddenly and cause it to shrink away from the shell. After each bearing is poured, swab off the mandrel with a piece of waste which has been dampened with clay wash. This leaves on the surface of the mandrel a thin layer of fine clay dust, which has been found to be of great assistance in producing smooth, clean bearings.

*Bronze or Steel Shells (Untinned).*—Preheat the mandrel to about 100 deg. C. The same reasons for having the temperature correct apply here as given under preheating of mandrels for iron or steel shells. After each bearing is poured it may be found necessary to cool the mandrel. This is done by dipping it in a clay wash, which leaves a layer of fine clay dust, the same as the swabbing for iron and steel shells. When the mandrel is at the proper temperature, the water of the clay wash will evaporate quickly on the surface of the mandrel, but will not spatter vigorously. The brass shell is preheated in the tinning operation and should be babbitted immediately after it has been tinned, before losing the heat given to it by tinning.

*Melting.*—Melt the babbitt in an iron pot or kettle, and maintain at a temperature between 460 and 470 deg. C. It is necessary that this temperature be maintained when pouring bearings and that the maximum temperature of 470 deg. C. be not exceeded at any time, as in certain grades of babbitt the metal is irreparably damaged if this temperature be exceeded. The use of an automatic regulator is necessary to hold the temperature within these limits. Stir the metal thoroughly at frequent intervals; otherwise the heavy metals will settle to the bottom of the pot. Keep the babbitt covered with charcoal or graphite to prevent oxidation.

*Pouring.*—Pour from a ladle in a steady stream directly down along the mandrel to avoid splashing or pocketing of air. The lip of the ladle should be kept free from burrs or other surface irregularities in order to pour a smooth, round stream. If the metal is splashed against the mandrel it will cause blowholes and give a mushy bearing.

*Summary.*—Pouring temperature for babbitt—460 to 470 deg. C. Temperature of "half and half" solder for tinning—340 to 375 deg. C.

Preheat iron and steel shells—100 to 150 deg. C.

Preheat bronze shells in tinning operation.

Preheat mandrel for iron and steel shells—100 to 150 deg. C.

Preheat mandrel for bronze shells—100 deg. C.

### Railroads Consume Less Coal in May

Class I railroads of the United States consumed 9,034,000 net tons of coal during May, 1923, as charged to account 394, compared with 9,373,000 tons during the preceding month and 6,964,000 tons in May, 1922, according to a recent report of the Bureau of Statistics of the Interstate Commerce Commission covering 177 steam roads. During the first five months of 1923 these roads consumed 48,578,000 tons as compared with 38,328,000 tons during the corresponding period of 1922. The delivered cost per ton in May last was \$3.47 compared with \$3.55 for the corresponding month of last year.

Consumption of fuel oil during May totaled 155,062,000 gallons compared with 147,694,000 gallons in April and 118,429,000 gallons in May, 1922. The totals for the first five months of 1923 and 1922 were 744,894,000 and 593,499,000 gallons respectively.



# Problems of Operating Men

Edited by James T. Beard



## Abnormal Roof Conditions Require Special Study

Observed Peculiarities in Roof Conditions Working the Miller Seam—Roof Breaks to Great Height with Little Warning—Need for Careful Study

FROM time to time, I have referred incidentally and in a suggestive way to a condition that has come under my observation in working the Miller or "B" seam. This was done in the hope of eliciting an expression of opinion in regard to the probable cause of the roof conditions that many must have observed and contended with in the working of that seam.

As yet, the subject has not received the consideration it demands and, for that reason, I beg to again draw attention, in a more direct manner, to the sudden breaking of the roof strata when driving openings in that seam. These breaks will frequently extend to an indeterminate height, even in narrow workings. The condition is peculiar to the Miller seam, which suggests that there must be some definite underlying cause, as yet unknown or but partially understood.

### ROOF FALLS DUE TO PRESSURE OF GAS OR WATER

When discussing the cause of these occurrences, with practical mining men, the opinion has generally been expressed that they are due either to gas or water. That each of these factors is capable of producing powerful effects in creating pressure cannot be denied. However, before we can ascribe the observed conditions to the action of either of these agencies, there must be evidence to support our conclusions.

In the instances that I have observed, all evidence has been lacking of the existence of either water or gas, previous to or immediately following the breaking of the roof. While it is true that one instance occurred in a mine generating small quantities of explosive gas, the other took place in workings where no gas was generated.

In respect to water, in the former instance, there appeared no indication that would suggest an excessive pressure from this cause, the quantity of water present being far less than what might be expected from the height of the cave and the local conditions. In the latter case, however, there was no evidence of water in the strata and we must look elsewhere for the cause.

### PRESENCE OF GAS OR WATER PLAINLY MANIFEST

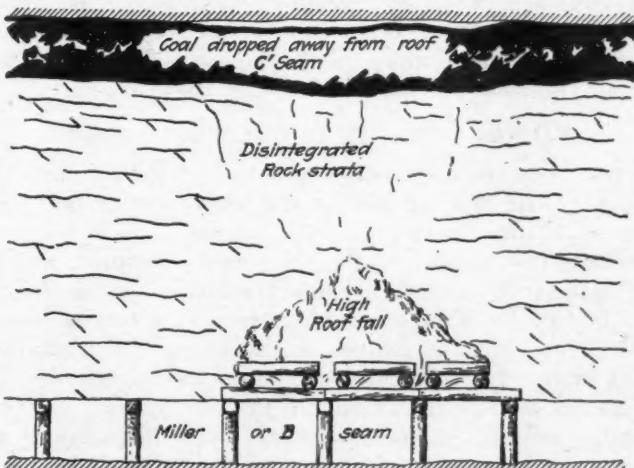
In my own experience and, I believe, in that of others also, where a roof fall has resulted from the pressure of gas or water, the presence of these elements has been manifest and the cause of the trouble was clearly evident, because the agencies that brought it about were plainly seen and their effects realized in a manner that left no doubt in the practical mind.

Now, in reference to the roof conditions observed in the working of the Miller seam, there can be no doubt of the existence of a producing cause other than those I have mentioned. It is possible that the sudden rupture of the roof strata, in certain cases, may result from a local condition such as the near approach of the excavation to a weakened barrier that is incapable of supporting the pressure thrown upon it in the progress of the work.

Again, the trouble may result from an undue concentration of pressure from a cause that is persistent over the entire area. My inclination is to attribute the observed conditions more generally to this latter cause. Where the Miller seam is overlaid by the upper seams of the lower geological period, or even by the next higher seam, which is the "C" seam, it is subjected to a pressure caused by the expansion of the limestone stratum lying between the two seams.

### HIDDEN CAUSE FOUND IN OVERLYING SEAM

From long observation in several widely separated localities, it is known that this limerock has been subjected to the action of water with the result that the coal of the C' seam has been badly ruptured. In places, the disintegration has left nothing but a soft deposit through which an iron bar can be easily forced. In other instances, as appears in the accompanying



SHOWING RESULT OF DISINTEGRATED STRATA

figure, the stratum has been partially removed allowing the coal to drop from its natural position so as to leave a space of from 6 to 12 in. between roof and coal.

My thought is that, in view of these facts, it is not unreasonable to assume that this disrupted condition in the strata overlying the Miller seam may be responsible for a concentration of pressure that is, perhaps, the chief cause of the abnormal conditions existing in the roof of that seam. It is possible that I am in error in assuming the exact location of the cause as being in the limestone underlying the C' seam.

While there may be other strata of a nature similar to the limerock mentioned and whose disintegration has caused the disruption of the roof of the Miller seam, I believe the assumption to be correct with respect to the general producing cause. I have referred to the rock underlying the C' seam only as illustrative of this condition, which I am inclined to think is responsible for the difficulty.

Let me say, in closing, that mining is an industry that must be conducted subject to the effects produced by physical causes. The more accurate knowledge we have of those causes, the better we will be able to contend with and overcome their effects.

Washington, D. C.

I. C. PARFITT.

### Action of Gas in Roof to Cause Sudden Breaks

*Timbering weak roof must closely follow extraction of coal—Air current disintegrates roof rock—Pressure of gas causes high falls.*

ATTENTION was drawn, some time since, to the sudden breaking of the roof at times when it is least expected to occur. If I recall correctly, the writer of the article had reference particularly to mining conditions existing in the Miller seam, which I think was being mined not far from Pittsburgh.

Since reading the article, I have been turning the matter over in my mind, at different times, and now desire to offer a few remarks regarding the possible causes of sudden breaks in mine roof. What I have to say is drawn from my own experience and observation regarding similar occurrences in the mining of coal in other districts.

It has been my practice when driving places under weak roof to have the timbering closely follow the extraction of the coal. Even then, it has often been necessary to provide other supports between the timber sets, in order to prevent the continual dropping of small fragments of the roof slate on the road.

#### FACTORS OPERATING TO BREAK MINE ROOF

Owing to the disintegrating action of the air current on the roof the trouble is greater at times than at others. It is always greater in summer than in winter, because the current then carries more moisture, which is rapidly condensed in contact with the cooler rocks in the mine. I have observed the action taking place more commonly in shallow mines where the workings are extended a considerable distance underground.

Beside the disintegrating action of the air on the roof, however, there is another factor that must be regarded as greatly affecting the strength of the roof and causing it to break suddenly. I refer now to the pressure of the gas that may exist in the roof strata. This pressure is often very considerable and far exceeds that of the atmosphere acting to support the roof.

So great is the difference between the possible pressure of the gas in the strata above and that of the atmosphere below, that any slight changes that may take place in the atmospheric pressure will have little influence in determining the tendency of the roof to fall. However, it is conceivable that a sudden diminution of atmospheric pressure may accelerate and assist the action of the gas in breaking the roof.

At times, it may happen that the gas emanates from an overlying seam of coal and extraction of the coal

in the seam below causes expansion of the gas and its pressure is exerted to break the intervening rock separating the two seams. Or a somewhat more impervious stratum may cause an accumulation of gas under a greatly increased pressure and give rise to an outburst in the seam below when the opportunity is offered.

#### REMEDY WHERE GAS ACCUMULATES IN ROOF

Where the roof is a slaty shale and gas exists in the overlying strata, its pressure will often fracture the roof when driving openings in virgin or solid coal. The breaking of the roof in such instances is caused not so much by the weight of the roof, as by the pressure exerted by the gas. The force thus acting along the line of an opening may have a powerful leverage that will enable it to break a fairly strong roof.

In the working of some fiery seams, I have known holes to be drilled up in the roof to a depth of four or five feet with a view of draining off the gas and relieving its pressure on the roof and rendering the latter less liable to be broken down. The effect of relieving the pressure of gas in roof strata is plainly manifest both in longwall and pillar workings where a heavy roof fall greatly relieves the pressure on the remaining pillars. It is well known that after the first break occurs, in longwall working, it is far easier to control the pressure on the face of the coal and this, in many instances, is largely due to the relief of the gas pressure in the strata above.

Bay City, Mich.

WILLIAM DICKINSON.

### Deep Mining in Belgium

*Necessity for deep mining of coal in Belgium not due to exhaustion of mines. Desire is to supply coking coal for blast-furnace use and make its steel industry independent of other countries.*

Sometime recently, reference was made in *Coal Age* to deep coal mining in Belgium (Vol. 23, p. 722) and in responding to the request for information on that subject, I showed that there were a number of coal shafts in that country whose depths ranged from 1,000 to 1,200 meters, and one reached a depth of 1,240 meters (4,068 ft.)

At that time it was not explained why the mining of coal was carried to such great depths in Belgium. It was naturally assumed by many that coal seams lying nearer the surface had been worked out and exhausted. That such is the case, however, is far from the truth.

Enough coal remains available, at depths between 250 and 750 meters to keep that country's production through several centuries longer at an annual rate of 35 million tons. The present capacity of the mines, however, does not exceed 25 million tons a year, but there is good reason to expect that the higher figure mentioned will be reached before five more years have passed.

The reason why Belgium has sunk many of its shafts to such great depths is solely to reach a good quality of coking coal needed for the blast furnaces and make the country's steel industry independent of foreign supply.

At the present time Belgium produces enough gas, steam and domestic coals to export an appreciable tonnage of these after supplying its own requirements; but it must import 70 per cent of the coal necessary to make the coke needed for its blast furnaces.

Belgium's present supply of domestic coking coal is

limited to the tonnage obtainable from that part of the lower coal measures thrown upward by geologic disturbances sufficiently to permit of their being mined by tunnels driven across the strata from more shallow shafts. But these shafts will soon have to be sunk deeper before reaching the coal lying in regular formation.

A number of the shafts just mentioned have been already deepened or are now being sunk to where the best quality of coking coal is expected to be found—the territory known as the "Great Flats." Some of these shafts will be 5,000 ft. deep before they can develop into good sized operations in the coking beds.

It is of interest to state, here, that the seams found in the lower measures, the coking seams, are those in which have occurred all the outbursts or blowouts recorded in Belgium, since these have occurred there, the earliest on record being in 1847. What is known of these occurrences, their causes and the phenomena that accompany them, encourages the belief that where the seams lie in regular formation, there will be less danger of their occurrence than in the disturbed territory to which operations have been thus far confined.

The "Great Flats" are also expected to present other natural advantages that promise cheap mining; namely, absence of faults, regularity of grades and greater uniformity in mining. In this system of development of their mines, the Belgian engineers have shown foresight and judgment that is commendable. Not only will they be able to produce cheaper coal, but the country will be independent of foreign supplies for maintaining its steel industry.

If present expectations are fulfilled, Belgium will produce a much larger tonnage of coking coal than they will need for home consumption and will be able to export much of the output to France where coking coal is scarce. This will not interfere with their present exportation of gas, steam and domestic coal.

Hoisting and ventilating are the two main problems always connected with deep mining. The first of these problems the Belgians have long since proved they know how to handle. At all the deep shafts in that country hoisting is done by the use of 4-deck cages guided by steel rails and run at a speed of 61 ft. a sec. In the region of Limbourg, a number of new shafts, having diameters of 20 ft. in the clear, are now being sunk. Each shaft is intended to hoist 2,000 tons per 8-hr. shift, from workings operated more than 4,000 ft. deep in the "Great Flats."

Ventilation presents quite a problem owing to the high temperature of the strata at the great depths mentioned as reached or to be reached. Nothing but a large abundance of rapidly moving fresh air will make this temperature bearable for man. Belgian coal seams average less than 30 in. in thickness, which makes it necessary to give the workings a great extension, in order to obtain the large outputs necessary to make such deep and difficult operations pay.

In order to drive large volumes of air through extensive, narrow and complicated openings it requires a high water gage. Fans of the Rateau system, developing water gages as high as 12 in., are coming more and more into use. These fans are capable of circulating 350,000 cu.ft. of air per minute through some of the deepest and narrowest mines of the country. All of the mines in Belgium are ventilated by exhaust fans as this is made compulsory by law. F. C. CORNET.

Quaregnon, Belgium.

## Inquiries Of General Interest

### Finding Length of Prop Timber on Steep Pitches

Length of Prop Depends on Amount Timber Is  
Underset and Is Independent of Pitch of Seam—  
Conditions in Seam Determine Underset of Post

KINDLY explain for our information, through the interesting columns of *Coal Age*, how to estimate the length of a prop that is underset so as to make an angle of 9 deg. with the perpendicular in the seam, assuming that the coal is 6 ft. thick and the seam has an inclination of 54 deg. Also, state if there is any way to determine the underset of a prop in seams of different inclinations, without resorting to the use of a table of sines, cosines, tangents, etc. INQUIRER.

Hiteman, Ia.

Referring to the accompanying figure, the line *od* is normal or perpendicular in the seam, its length being equal to the thickness of the seam. Extending this line and drawing the parallelogram *dbac*, the diagonal *ad* is a vertical line and the angle *dac* is the pitch angle corresponding to the inclination of the seam. This must not be confused, however, with the angle that the prop makes with the perpendicular, which in this case is 9 deg., while the pitch angle is 54 deg., the inclination of the seam being somewhat greater than that shown in the figure, but the principle is the same in any case.

The amount of the underset of a post must be determined by one's practical experience in the seam in question. While it increases with the steeper inclination of the seam, the underset of a post bears no positive relation to the pitch of the seam, but is dependent on conditions that can be determined only by practical experience in the working and timbering of the seam.

#### MUST ALLOW FOR THICKNESS OF WEDGE

Having decided on the amount of the underset of a post, or the angle it is to make with the normal in the seam, in any particular case, divide the thickness of the seam, expressed in inches, by the cosine of this angle, which will give the length of the post corresponding to the thickness of the seam. To this must then be added the difference between the depth of the foothold cut in the floor and the thickness of the wedge that is driven between the top of the post and the roof.

For example, taking the thickness of the seam as 6 ft. (72 in.), the corresponding length of a post when set at an angle of 9 deg. with the perpendicular in the seam, is  $72 \div \cos 9 \text{ deg.} = 72 \div 0.988 = 72.87$ ,

or  $72\frac{1}{2}$  in. Then, allowing for a foothold of, say 4 in. in depth and a cap-piece or wedge 3 in. thick, the required length of the post should be, say 74 in.

When the amount of the underset of a post is given in inches, as measured from the top of the post to

the perpendicular through its foot, the length of the post corresponding to the thickness of the seam may be found by taking the square root of the sum of the squares of the thickness of the seam and the given underset, expressed in inches.

## Examination Questions Answered

### Annual Bituminous Examinations, Pa. Foremen and Firebosses

(Selected Questions)

**QUESTION**—What are a mine foreman's duties relating to the following: (a) When the mine becomes dangerous through lack of ventilation? (b) Reporting of accidents? (c) Violations of the mining laws? (d) When any workman neglects to carry out or disobeys instructions? (e) In the removal of dangers reported to him? (f) Building of stoppings?

**ANSWER**—(a) The Bituminous Mine Law of Pennsylvania requires the mine foreman to notify the superintendent, in writing, whenever he considers the mine dangerous through lack of ventilation and the presence of gas or dust in portions of the mine (Art. 4, Sec. 5).

(b) The foreman must report all serious and fatal accidents, each week, to the mine inspector, specifying the nationality, age and occupation of the victims (Art. 4, Sec. 19). If the accident is fatal, he must likewise notify the coroner of the county (Art. 28, Sec. 1).

(c) The foreman must report to the district mine inspector all violations of the mining law coming to his notice (Art. 4, Sec. 23; Art. 5, Sec. 5).

(d) The foreman must suspend or discharge any workman guilty of neglect to obey or willful disobedience to his instructions and, in case, of serious accident or loss of life resulting therefrom, the foreman must give the name of the guilty party to the mine inspector of the district for prosecution according to law (Art. 4, Sec. 9).

(e) The foreman is required by law to give prompt attention to the removal of all dangers reported to him and if this is impracticable at the time, he must notify all persons in danger therefrom and see that they remain away from the place (Art. 4, Sec. 10). The foreman must see that all entrances to dangerous places are properly fenced off and danger signals posted on such fencing to warn persons to keep out (Sec. 11).

(f) The law requires the mine foreman to see that all stoppings along airways are properly built (Art. 4, Sec. 2). He must see that, in a mine generating gas and where the fireboss' station is located a mile or more from the mine entrance, all abandoned workings in the intermediate distance are completely sealed by stoppings of masonry, concrete or other incombustible material (Sec. 5). In all new mines, the stoppings between the main intake and return airways must be substantially built of masonry, concrete or other incombustible material; and the same requirement applies to the building of new stoppings or the renewal of old

stoppings in cross-entries, in mines generating gas (Art. 9, Sec. 5).

**QUESTION**—Write a mine foreman's daily report that will satisfy the requirements of the mining law, assuming that at least three violations of the law existed in the mine that day, selecting your own violations.

**ANSWER**—I have this day, July 23, examined the section of the mine in my charge and found the same in a safe and healthy condition, except in the following three instances: 1. In room No. 9, 2E-N entry, I found an extra charge of powder laid aside in the gob. 2. There was no timber on hand in room No. 13, 4E-N and I find no order received for timber for this room. Timber is clearly needed in the room, as the last row of props at the face is not completed. 3. Matches were found in a crosscut near a tool box a short distance from the head of main north entry. The first instance is in violation of Art. 16, Sec. 1, of the law; the second instance violates Art. 25, Rule 1; and the third instance violates Rule 32 of the same article. In each of these cases, I have taken possession of the checks of the men working in the places and shall investigate further.

**QUESTION**—In non-gaseous mines, what precautions should be taken to reduce to a minimum the dangers incident to coal dust?

**ANSWER**—No accumulations of dust must be allowed in any working place. Where the coal is cut by machines, the fine cuttings or "bug dust" must be loaded out in dustproof cars. If the coal is highly inflammable and is brought down by blasting, only permissible powder must be used and strict rules enforced in regard to charging and firing the shots. All places should be well watered before any shots are fired therein. Holes should be examined by competent persons before they are charged and permission is given to fire. Greater safety is assured, in the mining of a soft inflammable coal, when competent shotfirers are employed to examine, charge and fire all shots after the men have left the mine. In any case, all roads, travelingways and air-courses must be thoroughly cleaned at regular intervals. Strict rules must be made and enforced relating to blasting and all violations of the rules and requirements of the mining law suitably punished.

**QUESTION**—In a mine that is generating or is likely to generate carbon dioxide ( $CO_2$ ), what kind of lamps would you recommend to be used by the workmen?

**ANSWER**—If the mine is not generating or liable to generate explosive gas and rightly classed as an open-light mine, open-flame lamps or torches should be used throughout the mine. Owing to the generation or liability to the generation of carbon dioxide in dangerous quantities, no carbide lamps should be permitted in sections generating that gas or in places running to the dip where the gas is liable to accumulate. It is well known that the carbide lamp may continue to burn in air that is deficient in oxygen to an extent as to be unhealthy if breathed for any length of time. The open flame lamp will show by its dim burning that the air is unfit to breathe because of the presence of blackdamp, and will thus give timely warning.

## Coal Commission Investigators Report on Labor Relations in Anthracite Industry

A report dealing with labor conditions in the anthracite industry issued by the U. S. Coal Commission Aug. 8, in the main reiterates the recommendations presented by the Commission in its preliminary report of July 9, and adds others. The recommendation that the President should have the power to intervene if the opposing forces cannot come to an agreement before the expiration of the working agreement is repeated, as well as that recommending that the expiration date of the anthracite agreement shall be set sufficiently far from the renewal date of the bituminous agreement that suspension in both coal fields at one time shall not be invited. It condemns strikes and warns the union leaders against the outlaw labor disturbances, and opposes the propaganda issued by both operators and miners, characterizing it as "loose and often swashbuckling literature."

While not mentioning the check-off the Commission in its recommendations does say that "if the union is wise it will not permit the employer to take over the duty of securing members."

Dealing with "Anthracite Coal—A Vital Public Necessity" the Commission says the frequency with which labor has stopped production of anthracite, the disregard of public interest shown on occasion in the attitude of one or the other side of the parties to these controversies and the apparent impotence of the public to protect itself, has created a situation that the public considers intolerable. The demand for some sort of remedial public action is practically universal. Periodic strikes and the ever recurring menace of strikes emphasized by loose militant utterances on both sides is a condition that should be corrected.

The report reviews the organization and procedure of industrial relations from the first appearance of labor unions in the field in 1848, going more fully into conditions since 1903, and dealing particularly with the award of the Roosevelt Anthracite Coal Commission.

The operators have no organization for dealing directly or continuously with the union during the agreement period, says the report.

The more important causes of strikes and the friction which leads to strikes the report says, appear to be the following:

Attitude toward the agreement; wages; hours; irregularity of operation and attendance; attitude toward restriction of output; discharge and discipline; union membership; and administration, and then it discusses each at length.

Out of over fifty responsible operator executives interviewed, only two expressed themselves as opposed to the idea of an agreement with the union. Union officials held identical views toward the agreement and among no essential group in the union was there any advocacy of abolishing it and taking whatever the union could get without it.

From the standpoint of performance under the agreement, there are five groups of operators: A group with a liberal constructive labor policy that stands firmly for the maintenance of operator rights under the agreement but seeks to understand and win labor by constructive measures; a "peace at any price" group, who make concessions which give away essential rights of the operators under the agreement; a group of companies with little central control whose labor policy is the policy of their respective foremen; a literal constructionist group which energetically and literally supports the letter of the agreement and frequently maintains its opposition by its defensive power rather than through organized efforts to win co-operation, and lastly a group that tries to "get away with things" by whatever method possible, agreement or no agreement. These five groups, the report says, are not to be considered as mutually exclusive, one operator may at different times be found in several groups. In the union side the practice toward the agreement is in many places, in similar contrast

to their theoretical views. All the district leaders show real knowledge of the contract and of their responsibilities under it. They realize that strikes are outlawed and that it is their duty to prevent them and even to discipline locals who go out in violation of the contract. But all believe in the threat to strike and in practice they make exceptions to their condemnation of some strikes, especially of button strikes. In general, says the report, where they consider orderly method is inadequate for the relief of a real grievance, they tacitly sanction the resort to strike.

Stating that it is difficult to get comprehensive information about petty strikes and stoppages direct from the operators and the union, owing to the inadequacy of records, the Commission says the Anthracite Bureau of Information submitted a statement showing there have been sixty-eight strikes or stoppages in the period from September 1922 to March 1923 involving a total of 56,646 men with a loss of 188,514 man days.

The report shows that the anthracite industry has changed from one in which one of the foremost characteristics was its irregularity to one which compares favorably with most industries in this respect. The change is particularly marked in contrast with the lack of change in the bituminous industry, for the anthracite industry is now much more regular than the bituminous industry.

Discussing the attitude toward restriction of output, the report says that "without doubt, limitation of output does exist," that the amount varies by districts but does not seem to be an important problem in two of the three anthracite districts. The problem will not be solved, says the report, by denunciations, but through careful study by operators and union leaders of the factors which enter into a fair day's work and of the causes of undue restrictions.

Discussing union membership, the Commission says, the agreement between the anthracite operators, and the union is mutually accepted as a permanent institution and that the acceptance carries with it certain implications, the most important of which is that neither party during the life of the agreement will try to destroy the power of the other party or to assume the other's responsibilities or rights under the agreement. There is in the agreement no provision which can be interpreted to justify the union in forcing the operators to insist upon membership in the union as a condition of employment. Union miners, however, do insist upon membership and they enforce their insistence by stopping work.

"What practice should obtain in respect to union membership under a collective bargaining agreement is a debatable question," says the report, "the answer which should be arrived at by agreement or mutual accommodation between the parties. But any answer which relieves the union of responsibility for maintaining itself, and thus divorces the question of membership from the services rendered, is bound to be harmful to the union, not to mention the other interested parties. Unions like other institutions slip easily into arrogance and incapacity when existence is made too easy. Such a condition is sure sooner or later to make them a prey to attack both within and without."

The practice of the illegal strike or threat to strike to enforce union membership, the condoning of such strikes by those union officers who are obligated to prevent them, and the acquiescence in them by those against whom they are directed should be promptly and vigorously dealt with through the conciliation machinery, declares the report.

"Administration of Labor Relations" is next discussed and it is pointed out that each of the three parties to the agreement, the operator, the union, and the public, has a definite share of responsibility, and that the way in which these administrative relations are discharged makes for friction or the absence of friction.

"Such a collective bargaining agreement as exists in the anthracite industry," says the report, "cannot be maintained by police or statutory power, but can be maintained

only by the sense of responsibility and approval in each party to the agreement, backed on either side by an organization powerful enough and effective enough to command the respect of the other side and of its own members. On the union side, such an organization exists, for the union is the organization. When an operator violates the agreement, the whole weight of the union is thrown back of the effort to adjust."

There is no such organization among operators, they having no collective organization that functions from day to day to administer the operators' share of the agreement. So long as this disproportion in bargaining effectiveness exists, the process of attrition of the agreement will be likely to continue, says the report.

"Moreover," says the report, "another period of great strikes is likely to ensue corresponding to those between 1900 and 1912. This time, however, it will probably be the operators instead of the union who will be appealing to the public for fair play."

"It is our opinion the operators will not be in a position to take full advantage of their opportunity in the administration of the agreement," says the report, "unless there is, within each district an organization of the operators analogous to the union and constantly represented in labor adjustments by a competent man, or else an organization for the operators as a whole which is represented in each district by a competent labor adjuster. Such a man from the operators' side would correspond in his function to the union's district president and would be analogous, in adjustment proceedings, to the labor commissioner in some bituminous districts.

Referring to delays in the handling of dispute cases the report says there can be no question but that the long run interest of all parties is in the maintenance of the orderly method. To the public it means stability and cheaper coal. To the operators it means the limitation of direct action

and the threat of direct action. To the union it means the habits of law and order which alone permit the responsible management of a union necessary for its survival. Unnecessary delay in adjustment amounts, therefore, to playing with fire.

Discussing "Administration by the Union" the report says that a union fighting to establish itself in the face of powerful opposition is ordinarily a fighting organization pure and simple, but when it reaches the point of signing a formal agreement with employers it has ceased to be exclusively a fighting organization. It then takes over, together with definite advantages, definite responsibilities for maintaining relations on the agreed basis. The responsibility for seeing that the agreement is observed by the union must rest on the district and national officers.

That part of the machinery set up by the Roosevelt Commission may be regarded as the public's part in the administration of the agreement, says the report. A common complaint made by both operators and the union is over the delays centering around the functioning of the conciliation machinery, but the Commission declares that inadequate functioning should never afford an excuse for violation of the agreement. It then makes several recommendations concerning the work of the Conciliation Board. The best approach to a remedy for the evils of the general strike, will not, in the Commission's judgment, be found in an immediate resort to drastic prohibitory measures. The weight of opinion found among operators and union officials is that compulsory arbitration of the fundamental terms upon which a great industry shall operate, is not practicable, and offers no hope of solution of the problem of the general strike. Until measures for holding both sides to their public responsibilities have been completely exhausted it will be extremely unwise for the public to embark on more far reaching measures of regulation of labor relations.

### Warriner Answers Massachusetts on Boycott

S. D. Warriner, Chairman of the General Policies Committee of the Anthracite Operators, on Aug. 11 replied to the open letter on Aug. 4 of the Joint Special Coal Investigating Committee of Massachusetts. He gives the position of the Anthracite Operators in the present situation and offers "a plain explanation of the vital issues involved and the causes leading to the present situation," which he hopes will clarify their judgment and assist them in fixing responsibility. The Committee emphasized two points, the danger of another suspension on Sept. 1 with the resultant shortage of anthracite, and the high cost of anthracite to the people of Massachusetts and the proposed boycott against the industry. Mr. Warriner in his letter takes up these matters in order, stating that one is naturally the corollary of the other. His statement follows:

"I am in accord with your view that a suspension of mining for the benefit of a special interest and to the detriment of the public is never justifiable. Let us review the facts. The strike of 1922 was ordered as a predetermined act before the old agreement had expired and before the joint committee appointed to negotiate a new agreement had even met. The operators offered arbitration. The President of the United States urged arbitration.

"The union refused both and said, 'We refused arbitration from the President of the United States notwithstanding all the pressure of the Government was back of the proposal.'

"As soon as the major policy of the union was satisfied by the settlement of the bituminous strike, a settlement of the anthracite was made possible and promptly reached.

"The issues in the present emergency are as follows:

"1. The operators at the outset asked for a joint pledge to the public that no suspension take place on Sept. 1, upon the understanding that the new agreement should be retroactive. The United Mine Workers refused.

"2. The operators endeavored to reach an adjustment of wages and working conditions, but the United Mine Workers refused to continue negotiations, unless the operators first granted the closed shop with the check-off.

"3. The operators refused to grant the closed shop with the check-off.

"4. The operators offered to extend to April 1, 1925, the present contract with its war-peak wages and to grant certain of the union demands. This offer was not accepted though the United States Coal Commission found that present earnings admit of a reasonable standard of living.

"5. Finally, the operators offered to arbitrate all issues, not even excepting the closed shop with the check-off.

"The mine workers refused four of these propositions and the operators one, viz: the closed shop with the check-off. Our objections to this proposition are that it is fundamentally unsound in principle, and expensive to the users of anthracite in practice. Our faith in our position is shown by our willingness to arbitrate. Without a surrender of vital principles, we have taken every step that has been suggested to avoid a suspension on September 1. To have done otherwise would justly open us to your criticism.

"In our judgment arbitration represents a sound social policy in a basic industry where collective bargaining fails.

"Relative to the cost of anthracite and the use of the boycott: The United States Coal Commission pays tribute to the anthracite operators for their restraint and co-operation with public officials during the anxious situation of last winter resulting from the strike, and the care used in the distribution of coal. It is our hope that, if continuity of operation can be secured, the economic ills of which you complain will disappear. It is true that the cost of anthracite has risen, but although it has not receded from the peak, yet it is a fact that the peak of anthracite prices was never as comparatively high as many other commodities. The reports of the United States Coal Commission including its later report on retail distribution thoroughly covers the subject and invites your study. You are quite correct in saying that anthracite is not a necessity. We frankly admit that in order to retain the asset of your markets we must compete in quality and service with other fuels.

"In conclusion, let us now repeat that we have always been ready in the present emergency to extend the old agreement, to resume negotiations or to arbitrate to the end that there be no suspension of mining this year."

## The Union Ultimatum: The Check-off or No Anthracite

The check-off or no anthracite, that is the ultimatum of the United Mine Workers of America to the anthracite operators and the American people, according to a statement issued this week by the anthracite operators. Extracts from the statement follow.

"They refuse the operators' offer to arbitrate any and all issues. They refuse to consider wages or working conditions until this demand is granted. They insist on what no other union demands. Negotiations are necessarily brought to an end. If government attempts to take over the mines, the same ultimatum will be outstanding, for the union grievance is against its delinquent members, and not the operators. In either case a strike for the check-off, the operators are advised, would be a violation of the Anti-Trust Laws.

"The crisis embraces more than a menace of a coal shortage, for it raises questions which go to the very heart of our concept of political and social rights. It has also a very practical bearing on the question of mine management and the cost of production. The public is entitled to be heard. To it the operators submit their reasons for refusing this demand. They believe they have no alternative.

"The check-off is a scheme for compulsory union membership whereby the employer collects union dues and assessments by deducting them from the wages of his employees. No man can be employed who is not a union member and whose wages are not so docked. The president of the union says that under this regime if a miner does not join the union he can "dig oysters in Florida." The wishes of the individual employee are not considered. All wages must be taxed to meet union requisitions in whatever amount union authorities direct.

This demand, for the enforcement of which the United Mine Workers are prepared to deprive the public of anthracite, involves a monopolistic agreement between the union and all anthracite operators, making membership in the United Mine Workers compulsory for all persons throughout the entire industry, except clerical and managerial forces.

"The demand militates against our principles of liberty, runs counter to the statements of the Presidents of the United States and Federal Administrations for over twenty years, and is in conflict with the rulings and practices of our Federal government as well as the decisions of many State courts forbidding the State and its political subdivisions to discriminate against union or non-union men.

"The United Mine Workers have been guilty of violating the anti-trust laws, and its avowed policies are aimed in that direction. It has the express authority, under its constitution, to call general strikes, which stop all commerce in coal, and, in 1922, did declare such a general strike, clearly in violation of the Federal Anti-Trust Law.

"By its recent refusal to pledge itself to the public as against another anthracite suspension, by its threat of a suspension unless it be given a monopoly, by its avowed policy of resorting to a national tie-up rather than accept the principle of arbitration in cases where collective bargaining fails to reach an agreement, by seeking arrangements with unions in other countries to prevent America from importing coal in time of emergency, this union is committed to a policy in violation of the Anti-Trust Laws and against the public interests.

"If the operators weld this union into an ironclad monopoly, charges that they encourage general strikes by that monopoly in order to create a market shortage will not lack ready utterance and belief.

"As long as the United Mine Workers avow its policy of resistance to arbitration and a resort to national strikes in case of disagreement, the operators cannot escape responsibility for such conduct, if by agreement they actively lay the foundations for more protracted coal famines.

"The anthracite operators have demonstrated their approval of collective bargaining where men voluntarily get together but cannot approve collectivism based on coercion which forces men to join an association and combine against their wills.

"This right of industrial liberty is no vague abstraction advanced for convenient purposes, but a fundamental reality, the practical importance of which is shown in many unionized industries where individual workmen have been persecuted and arbitrarily driven from their trades.

"Under the closed shop regime, what becomes of the numerous miners who are expelled for various periods up to 99 years and are fined various sums up to \$2,000? What becomes of those who wish to enter the industry and cannot pay the exorbitant initiation fees which are sometimes charged? What becomes of the various nationalities against which local unions discriminate? What becomes of the miners fined or expelled for exceeding the union limit of production?

"The records of the United Mine Workers, giving only an incomplete report of disciplinary action taken by the union in a period of sixteen weeks, shows over 600 men expelled for 99 years and over 40 men fined \$1,000. In the same period the penalties showed 1,236 members were fined a total of \$171,852 and exiled from their trade for a total of 66,784 years.

"Individual self-reliance and responsibility and individual incentive are gone and lock-step becomes the rule when all of the doors of opportunity are slammed in the faces of those who, rightly or wrongly, disagree with an organization which monopolizes the entire industry.

"Nothing that the operators do or have done is advanced as an argument in support of the demand to change this traditional policy. The union merely seeks the help of the paymaster to coerce delinquent and recalcitrant miners. It proposes to deprive the public of anthracite, because perchance some miners are slow to pay their dues. Like a jurisdictional strike, it is a quarrel within the union, with the operators and the public innocent bystanders, conscripted to play a part. The non-combatants are to suffer in this issue.

"Should monopolistic power be strengthened in an organization which has adopted the fixed policy of rejecting arbitration and preferring public suffering? Will the American people sanction more monopolistic privileges to an organization which gloats over its defiance of the Chief Executive and which, according to that executive, so largely has the country at its mercy? Have the people forgotten how, but a few years before President Wilson declared the activities of this organization to be 'not only unlawful but unjustifiable,' and excoriated it for breaking its contracts? Is there any important union in the United States so inconsiderate of the public?

"All of these matters were presented by the operators to the United States Coal Commission in a series of papers which so far as we know met no contradiction from the Union. These papers showed that the organization had no adequate sense of responsibility to the public, the operators, its members, or its contracts and that this lack of responsibility was due to a lack of legal and moral restraint and continued immunity from the consequences of its wrong-doing.

"We believe that the way out of this trouble is through it. That the American people should resolutely resist this demand coupled though it be with the threat of a nationwide tie-up. It is unwarranted by conditions in this industry. The judgment and experience of all industry are against it. In places where it has been tried the results have been disastrous and industrial warfare exists in extreme form.

"To grant it would mean an illegal combination and an abandonment of individual rights contrary to the declarations of the Presidents of the United States for over twenty years as well as a repudiation of the principles of the Roosevelt Award of 1903. It would extend the monopoly of the United Mine Workers of America, notwithstanding its practices have been under the condemnation of ex-President Wilson and President Harding, at a time when irresponsibility and a ruthless defiance of public interests dominate its policies."

## What Is the Human Body Worth?

Posted in many thousand mines and workshops throughout the United States are notices, telling employees that they are protected by the provisions of their various state compensation laws. Lest any should not see and understand them, these notices often are printed in several languages. Yet in different states, there are various legal and medical interpretations of the 42 workmen's compensation laws now in force, the laws themselves having taken on widely different meanings in questions of personal injury and other accidents.

In an effort to call attention to these disagreements, which are constantly being brought before the State Legislatures and courts, the National Industrial Conference Board, New York, has just completed an exclusive report on the medical phase of workmen's compensation acts in the United States.

Every workmen's compensation case is a medical case, either actively or potentially. The Board points out that time must be lost from work because of injury to entitle a worker to compensation and this presupposes medical attention in practically all cases. The medical problem is one of the first to be encountered and one of the most important to settle in a manner satisfactory to all. At present there is so much conflict among the different states' administrative laws, and such a lack of facilities for collecting the information on this question, that the report was undertaken by the National Industrial Conference Board as a new contribution to this vital American problem.

Identical injuries are compensable in widely varying amounts in various states, and there is a similar inequality in the courts' interpretation of identical sections of the various laws. What is needed most in the administration of the workmen's compensation laws, in the opinion of the Board's experts, is greater consideration of the opinion of medical men in the administration of the laws and more uniform opinions among those concerned with their administration.

There is an increasing tendency to give due consideration to the value of adequate medical treatment in the administration of the laws. Early in their administration, the doctor's part received scant attention. In some states, even for the most serious injuries, only two weeks' medical treatment could be legally provided. "A period of experience has now elapsed," says the report, "sufficient to enable those who make the laws and those who administer them to obtain a better view of the problem. Such experience has shown the advisability of greatly increasing both the time and amount of medical service rendered, until at this time in 20 states such service may be unlimited."

The term "medical service" receives widely different interpretations in various states. Ohio and Connecticut have freed employers from liability when injured workmen took their troubles to quacks, masseuses and "doctors of medical electricity." Similarly the California State Commission refused to reimburse a worker who consulted a Chinese herb doctor. Iowa and Connecticut do not regard osteopaths as qualified to act in compensation cases, while California permits them.

States differ in the law's rulings on various surgical operations. For instance, the hand extends to the elbow in the legal opinion of Alabama, Connecticut, Delaware, Kansas, Nebraska, New York and other states, while it extends only to the wrist in Colorado, Idaho and Montana. The human foot in Colorado extends only to the ankle, but in Alabama it extends to the knee. New York takes a middle ground, merely qualifying it as some place "between the knee and the ankle."

Various state courts and commissions have answered in various ways the question: "What is the human body worth?" For example a thumb is worth \$225 in Wyoming, \$600 in Oregon, and in New York and Alabama the legal compensation for 60 weeks. Wyoming holds a human hand worth \$1,000, while its value rises to \$1,600 in Washington, \$1,900 in Oregon and 244 weeks' compensation in New York, and it is worth 104 weeks' compensation in Colorado.

## Union Issue No Swashbuckling Publicity, Says Ellis Searles

Considerable resentment is displayed by Ellis Searles, editor of The United Mine Workers Journal, at the following statement in the report of Dennison, Hotchkiss and Willits on Labor Relations in the Anthracite Industry made public last week by the Coal Commission which says that "The loose and often swashbuckling literature that emerges on occasion, from the legal and publicity departments on both sides is a constant incitement to trouble," and to the mention of "irresponsible propaganda" and "misleading information."

In a communication to the Coal Commission dated Aug. 11, Ellis Searles, John Moore and Thomas Kennedy asked the commission whether this document is "merely the report of the investigators to the Commission or whether it is a statement of the Commission to the public." They asked "Has the Commission adopted the document 100 per cent as a declaration of the views of the Commission? Did the Commission authorize these investigators merely to conduct an inquiry or did the Commission delegate to these investigators authority to prepare binding conclusions on this important subject for the Commission and its members?"

The representatives of the mine workers emphatically informed the Commission that their organization does not indulge in swashbuckling literature with reference to the industry nor has it issued any irresponsible propaganda or misleading information on that subject. Since it has employed no legal talent in the preparation of its statements to the commission, the authors of this statement "anticipate that the answer will be that the operators had a legal department and that the reference was intended to apply to propaganda issued from that source." These representatives of the miners served notice on the Commission that they do not think much of this report on labor relations if it is "as accurate on other subjects as it is on this one."

The members of the Commission are reminded that they "specifically requested the United Mine Workers of America to refrain from hiring lawyers to present their case to the Commission." They state that

"The United Mine Workers have had no propaganda or publicity, neither 'swashbuckling,' 'irresponsible' nor any other kind about anthracite."

Concluding they say they have no excuses or apologies for anything that the United Mine Workers of America have said to the public in regard to either the bituminous or anthracite industry. It has kept well within the bounds of truth and propriety in this matter according to Mr. Searles.

## Civil Liberty Committee Condemns Private Guards in Mine Villages

Winthrop D. Lane, whose writings on the West Virginia coal industry are well known, has just published a report, submitted to the U. S. Coal Commission on Aug. 12, which he prepared for a self-styled "Committee of Inquiry on Coal and Civil Liberties." The sponsors of the report are said to be Zachariah Chafee, Jr., Professor of Law at Harvard University; Prof. Herbert A. Miller of Oberlin College; the Rev. John A. Ryan, Director of the National Catholic Welfare Council of Washington, D. C.; the Rev. Arthur E. Holt, Social Service Secretary of the Congregational Church of Boston, and Kate Holladay Claghorn, head of the Department of Social Research of the New York School of Social Work. Jerome Davis, Assistant Professor of Sociology of Dartmouth College, assisted Mr. Lane.

The report covers conditions in parts of Pennsylvania, West Virginia and Alabama. It particularly is directed again the private guards employed by coal companies in non-union fields.

### COAL AGE INDEX

THE INDEXES to COAL AGE are furnished free to all who ask for them. The index for the first half of 1923 is now ready for distribution. A copy can be had by addressing a postcard to the subscription department of COAL AGE.

## Washington Moves to Prevent Anthracite Strike

On Monday the Coal Commission invited the anthracite operators and the representatives of the United Mine Workers to meet with the Commission in New York. This is the first step toward prevention of a strike in the anthracite field that has been impending since the hard coal mine workers issued their ultimatum on July 27 that negotiations could not proceed unless the operators granted forthwith the check-off. It is understood that this action follows the wishes of President Coolidge, with whom the commissioners have outlined the problem. What proposition the Commission will put before the two sides is not announced, but it is understood that the administration has made up its mind that there shall be no strike and that this will be the burden of the communication borne to the contending parties.

Events at Washington moved fast last week toward intervention by the President in the anthracite deadlock. Among the callers President Coolidge has had since he moved to Washington nearly two weeks ago, those with counsel on the hard coal situation have been the most numerous. John Hays Hammond, chairman of the U. S. Coal Commission saw the President for a short time early last week. Commissioner Smith called on Saturday, Aug. 11. Samuel Gompers has been at the executive offices twice in a week. Former Senator Calder and Representative Treadway have called, it is understood, to lay before the chief executive their views on the situation. Secretary Hoover and Commissioner Eastman of the I. C. C. talked with the President on the same subject, it is reported.

Commissioner Smith left for Gloucester, Mass., Saturday night to confer with Mr. Hammond, returning the next night. Mr. Hammond at once gave out a statement saying that the president will back the Coal Commission. His statement follows:

"I discussed the situation with the President recently and so did Dr. Smith. We found the President in accord with us and were convinced that the commission will receive his unqualified support. We have complete confidence that the situation can be handled.

"The commission believes, that neither the operators nor the miners will assume the responsibility of a lockout or strike. We realize that both are men of serious minds and realize the position they would be in before the public if a

suspension of anthracite mining occurred. Both sides realize that a suspension of operations in the anthracite mining field would afford an opportunity to the bituminous miners to dispossess them of a large part of their market for anthracite.

"Irrespective of whether there is a suspension of mining after Sept. 1, the anthracite operators realize that they must in the future meet serious competition with substitutes in their market. Recognition of this fact certainly will be a deterrent to both operators and miners in assuming responsibility for any suspension.

"Further, the commission has been busily engaged in preparing for a possible contingency by studying the sources of supply of coke and low-volatile bituminous coal. The commission feels assured that if the emergency exists, the bituminous mines will be able to supply other kinds of fuel. Not only will the use of other kinds of fuel prevent the people of Massachusetts from freezing to death this winter, but it would have considerable effect in preventing any increase in price, if not, indeed, resulting in lowering the price of anthracite in the near future.

"There is no justification whatever for anthracite dealers asking a higher price than has been obtained during the last few months, nor will the payment of higher prices assure a supply of anthracite if a suspension of mining occurs. If a strike occurs there will be no anthracite available at any price. Even if a strike should occur it would not be a protracted one, because a strike can be broken by the use of substitutes without any great hardship."

The news from the hard coal fields is to the effect that the issue of the check-off is not popular with the men. It is generally known that John Lewis chose this as an issue and issued his famous ultimatum to the conferees at Atlantic City without consultation with his confederates. The mine workers are more interested in higher wages than feeding money to the union and the trade has already discounted the final settlement as an abandonment of the check-off issue by the union and a settlement with a small increase in wages. Just how this is to come to pass is not being prophesied, but it is expected that there will be a short suspension, for effect.

"It heartily approves all investigations that are being made to ascertain the profits of retailers in individual municipalities, the determination of profits, and any suggestions that can be made for the bettering, if needful, of conditions disclosed in the investigation of the subject."

### Lehigh & Wilkes-Barre Coal Sale Approved

The sale of the Lehigh & Wilkes-Barre Coal stock by the Jersey Central to the Reynolds syndicate was approved by the United States District Court on August 8.

The Court dismisses the objections of Isaac T. and Mary T. W. Starr that the stock was sold to the Reynolds syndicate for an inadequate price and in violation of the dissolution order because there had been an agreement between the directors and Reynolds that the coal tonnage would be continued over the Jersey Central.

Judge Davis, who wrote the opinion, said in part: "Fraud has not been proved and the price was not so inadequate, if inadequate at all, as to be a badge of fraud. The directors acted in good faith and used their best judgment and in the absence of fraud the Court will not substitute its judgment for that of the directors."

The Court points out that there is a difference of less than a quarter of a million dollars between the bids of Reynolds syndicate and the Lehigh Coal & Navigation Company for a property worth at least \$32,000,000. The burden of establishing that stock was not sold in good faith or at a fair market value was not met by the objectors.

Plaintiffs in the Lehigh & Wilkes-Barre Coal case have six months in which to appeal from the decision of the Federal Court approving the sale of the Jersey Central stock to the Reynolds syndicate.

### Coal Commission Curtails Retail Study

The United States Coal Commission made public the following statement on Aug. 6:

"There seems to be a lack of information as to how far the United States Coal Commission has gone in the anthracite and intends to go in the bituminous industry with reference to the retailing of coal.

"To set the matter right, the Commission announces that it soon discovered that with more than 40,000 retail coal dealers in America, many of whom had their coal business complicated with other articles of merchandise, the appropriation would not permit a presentation relative to the investment, cost, margin, and profits of each of these dealers.

"The Commission has done all that it could in the way of sampling in many of the municipalities of the country the retail coal trade, and will present the result of its investigation to the country, but it has not gone and cannot go into an investigation of all the retail coal dealers of America. An investigation of such a character could not be made short of \$2,000,000, and would not be conclusive whether the citizens of a municipality were satisfied to pay the prices charged by the retailer for coal.

"Therefore, the Commission has concluded that except as to the general investigation of the subject of the retail trade, it will have done all it can when it furnishes the information as to cost at the mine. The railroad rate is easily ascertainable.

"Citizens and municipalities must do something for themselves. If they believe that they are paying to the retailer an exorbitant profit, they should supplement the work of the Commission by local investigations of the subject.



## Weekly Review

The middle of August may be considered to mark the turning point of this season's soft coal summer market. From the beginning of the coal year last April a steady demand has been met by a steadier supply and the spot price has continually softened. There have been few periods when soft coal production has been as uniformly high as it has been this year and the price so uniformly low. Figures published from time to time by the Geological Survey show that the demand has been quite generally distributed—no field has taken an exceptionally large share of the trade and none has suffered, in tonnage, disproportionately.

The general state of business, starting out with great promise early in the year has lived up to expectations. A slump in July from which recovery is now in progress was anticipated. It was a slump only by comparison with May and June, for as compared with other years the records were high. There is abundant indication that the fall business all around will be good. That means that consumers will need the stocks of soft coal they have been putting down this summer and that buying during the next two months will depend on what happens to price. The trade is looking forward to a period of car shortage within the next forty days that will serve the useful purpose of stiffening soft coal prices to where there is a new dollar to be had for the old on spot sales.

### COKE PRODUCERS WATCHING SITUATION

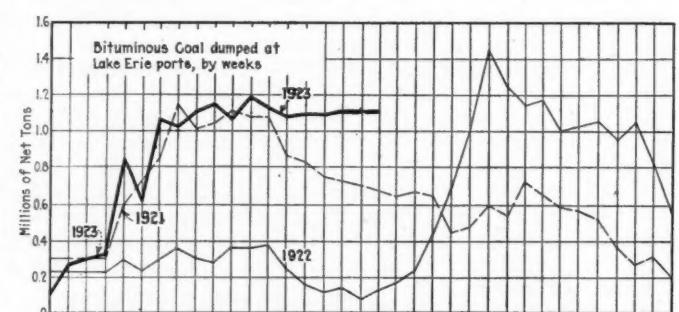
For the next few weeks the market will be unsettled to the degree that a strike in the anthracite region is in prospect. If it appears that a prolonged suspension is inevitable that fact will react on the bituminous coal market, stiffening prices in the East. Coke producers are watching this situation with interest, because coke will be the substitute in greatest demand.

Production of both anthracite and bituminous coal was curtailed last week out of respect for President

Harding. Mining in all fields was generally suspended on Friday, Aug. 10, the day of the funeral at Marion, Ohio. The Geological Survey reports that during the week ended Aug. 4 anthracite production is estimated at 2,018,000 net tons.

*Coal Age* Index of spot prices of bituminous coal gained one point to 196 on Aug. 13, with an average price of \$2.37 at the mine.

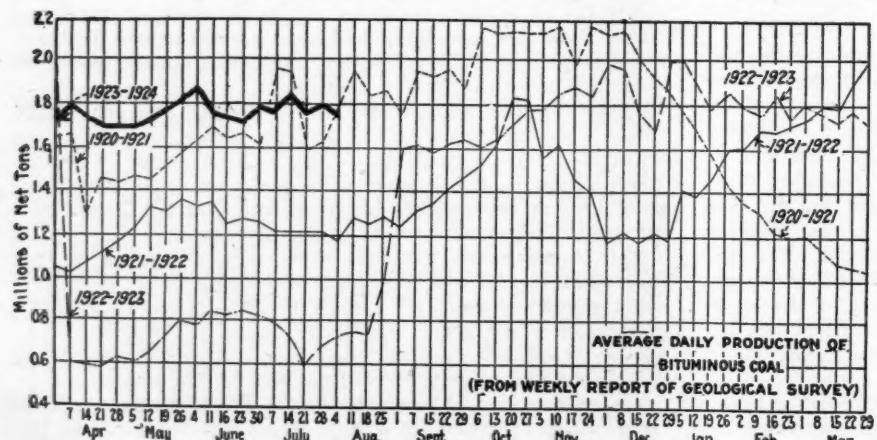
There is practically no change in the Chicago market. Southern Illinois screenings were a trifle steadier and domestic demand grew gradually. A fairly brisk market exists for anthracite and for domestic smoke-



LAKE COAL DUMPED (Net Tons)		
Week Ended Aug. 13	1,047,197	Season to Aug. 13
Cargo	54,126	16,019,285
Fuel		805,806
Totals	1,101,423	16,825,091

less coals in Chicago and vicinity, while the St. Louis dealers are doing practically nothing. In New England buying is almost at a standstill and consumers seem content with their present reserve stocks.

The anthracite situation continues to increase in activity. With Sept. 1 drawing closer consumers are becoming anxious about their winter coal. Although



### Estimates of Production

(Net Tons)

#### BITUMINOUS

	1922	1923
July 21	3,692,000	10,676,000
July 28 (b)	3,952,000	10,804,000
Aug. 4 (a)	4,313,000	10,579,000
Daily average	719,000	1,763,000
Calendar year	207,608,000	324,998,000
Daily av. cal. year	1,131,000	1,776,000

#### ANTHRACITE

July 21	28,000	2,005,000
July 28	27,000	2,080,000
Aug. 4	29,000	2,018,000
Calendar year	23,464,000	60,903,000

#### COKE

July 28 (b)	111,000	361,000
Aug. 4 (a)	110,000	345,000
Calendar year	3,738,000	11,888,000

(a) Subject to revision. (b) Revised from last report.

retail dealers have comparatively little of the domestic sizes in their yards they admit having received heavy shipments during the summer, all of which have been applied on customers' orders. The steam coals are moving in good shape. All three sizes gained strength during the past week and some heavy buying of the better grades of independent product was done.

Lake shipments continue to average near 1,000,000 net tons weekly. Reports from Ohio indicate that the congestion at the lower lake ports is gradually passing away.

Dumpings for all accounts at Hampton Roads during the week ended Aug. 11 amounted to 397,173 net tons, a decrease of 41,560 tons when compared with the previous week.

### Midwestern Business Moves Slowly

Coal trading on the Chicago market continued at mediocre pace during the past week without important changes

in quotations. Southern Illinois screenings steadied a trifle so that few if any sold under \$1.50 and the average ran around \$1.65@\$1.75 and eastern smokeless began to get tighter. Domestic demand grows gradually. Orders are signed for shipment early in September at prevailing prices to outlying dealers, while city yards continue to buy a little here and there at rock bottom. Mine running time in Illinois and Indiana is a little improved since two weeks ago when railroad orders slumped off leaving the industry at its lowest point.

While anthracite and domestic smokeless business is fairly brisk in Chicago and vicinity, it remains quiet in St. Louis. There, dealers are doing practically nothing. There is only about 15,000 tons of anthracite in storage in St. Louis and inquiry has dropped off entirely. Neither is smokeless or coke in demand. Country trade in both steam and domestic is flat.

Illinois fields generally are quiet because of the lightness of railroad demand. Southern Illinois is centering its efforts on domestic sizes with a trifle of success. Association prices on lump are still quoted at \$4.10@\$4.35 with independents running down to \$3. The Du Quoin and Jackson

### Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Aug. 14 1922	July 30 1923	Aug. 6 1923	Aug. 13 1923†	Market Quoted	Aug. 14 1922	July 30 1923	Aug. 6 1923	Aug. 13 1923†	
Smokeless lump.....	Columbus.....	\$6.15	\$5.85	\$5.85	\$5.75@ \$6.00	Franklin, Ill. lump.....	Chicago.....	.....	\$3.65	\$3.65	\$3.50@ \$4.35
Smokeless mine run.....	Columbus.....	5.75	3.00	3.00	2.75@ 3.25	Franklin, Ill. mine run.....	Chicago.....	.....	2.85	2.85	2.75@ 3.00
Smokeless screenings.....	Columbus.....	5.65	2.80	2.35	2.25@ 2.50	Franklin, Ill. screenings.....	Chicago.....	.....	1.65	1.65	1.50@ 1.85
Smokeless lump.....	Chicago.....	5.85	6.10	5.75	5.50@ 6.75	Central, Ill. lump.....	Chicago.....	.....	2.60	2.60	2.50@ 2.75
Smokeless mine run.....	Chicago.....	5.75	3.60	2.75	2.75@ 3.25	Central, Ill. mine run.....	Chicago.....	.....	2.10	2.10	2.00@ 2.25
Smokeless lump.....	Cincinnati.....	5.60	5.75	5.75	6.00	Central, Ill. screenings.....	Chicago.....	.....	1.35	1.35	1.35@ 1.40
Smokeless mine run.....	Cincinnati.....	5.50	3.35	3.25	2.50@ 3.00	Ind. 4th Vein lump.....	Chicago.....	.....	3.35	3.35	3.25@ 3.50
Smokeless screenings.....	Cincinnati.....	5.40	3.00	2.85	2.50@ 3.25	Ind. 4th Vein mine run.....	Chicago.....	.....	2.60	2.60	2.50@ 2.75
*Smokeless mine run.....	Boston.....	10.15	5.45	5.35	5.50@ 5.75	Ind. 4th Vein screenings.....	Chicago.....	.....	1.60	1.60	1.50@ 1.75
Clearfield mine run.....	Boston.....	8.00	2.35	2.35	2.00@ 2.75	Ind. 5th Vein lump.....	Chicago.....	.....	2.85	2.85	2.75@ 3.00
Cambridge mine run.....	Boston.....	9.00	2.85	3.00	2.50@ 3.25	Ind. 5th Vein mine run.....	Chicago.....	.....	2.10	2.10	2.00@ 2.25
Somerset mine run.....	Boston.....	8.40	2.60	2.60	2.25@ 3.00	Ind. 5th Vein screenings.....	Chicago.....	.....	1.45	1.45	1.40@ 1.50
Pool 1 (Navy Standard).....	New York.....	.....	3.35	3.25	3.00@ 3.50	Mt. Olive lump.....	St. Louis.....	.....	3.00	3.00	2.75@ 3.25
Pool 1 (Navy Standard).....	Philadelphia.....	.....	3.45	3.40	3.25@ 3.65	Mt. Olive mine run.....	St. Louis.....	.....	2.00	2.00	2.00
Pool 1 (Navy Standard).....	Baltimore.....	.....	.....	.....	.....	Mt. Olive screenings.....	St. Louis.....	.....	1.75	1.50	1.50
Pool 9 (Super. Low Vol.).....	New York.....	2.75	2.55	2.20@ 2.75	Standard lump.....	St. Louis.....	.....	2.55	2.30	2.35@ 2.50	
Pool 9 (Super. Low Vol.).....	Philadelphia.....	8.25	2.60	2.60	2.50@ 3.00	Standard mine run.....	St. Louis.....	.....	1.85	1.85	1.85
Pool 9 (Super. Low Vol.).....	Baltimore.....	7.50	2.40	2.45	2.50	Standard screenings.....	St. Louis.....	.....	.90	1.05	1.00@ 1.10
Pool 10 (H. Gr. Low Vol.).....	New York.....	8.15	2.25	2.25	2.00@ 2.50	West Ky. lump.....	Louisville.....	6.35	2.25	2.25	2.15@ 2.50
Pool 10 (H. Gr. Low Vol.).....	Philadelphia.....	8.00	2.15	2.25	2.10@ 2.50	West Ky. mine run.....	Louisville.....	6.25	1.60	1.60	1.50@ 1.85
Pool 10 (H. Gr. Low Vol.).....	Baltimore.....	7.50	2.25	2.25	2.25@ 2.30	West Ky. screenings.....	Louisville.....	6.10	1.05	1.05	.90@ 1.25
Pool 11 (Low Vol.).....	New York.....	7.65	2.00	1.80	1.65@ 2.00	West Ky. lump.....	Chicago.....	7.15	2.10	2.10	2.00@ 2.25
Pool 11 (Low Vol.).....	Philadelphia.....	7.85	1.85	1.95	1.75@ 2.15	West Ky. mine run.....	Chicago.....	7.10	.95	1.30	1.25@ 1.35
Pool 11 (Low Vol.).....	Baltimore.....	7.10	2.00	2.00	2.00@ 2.10						

### High-Volatile, Eastern

Pool 54-64 (Gas and St.).....	New York.....	7.60	1.80	1.80	1.65@ 1.90	Big Seam lump.....	Birmingham.....	4.75	3.25	3.50	3.40@ 3.65
Pool 54-64 (Gas and St.).....	Philadelphia.....	7.75	1.80	1.80	1.75@ 2.00	Big Seam mine run.....	Birmingham.....	3.85	1.95	2.00	1.75@ 2.25
Pool 54-64 (Gas and St.).....	Baltimore.....	7.50	1.70	1.70	1.75	Big Seam (washed).....	Birmingham.....	4.00	2.35	2.35	2.25@ 2.50
Pittsburgh sc'd gas.....	Pittsburgh.....	2.65	2.65	2.60@ 2.75	S. E. Ky. lump.....	Chicago.....	5.85	2.85	3.10	2.75@ 3.50	
Pittsburgh mine run (St.).....	Pittsburgh.....	1.95	2.05	2.00@ 2.15	S. E. Ky. mine run.....	Chicago.....	5.75	2.10	1.85	1.60@ 2.00	
Pittsburgh slack (Gas).....	Pittsburgh.....	1.45	1.55	1.50@ 1.60	S. E. Ky. lump.....	Louisville.....	5.85	2.90	2.85	2.75@ 3.00	
Kanawha lump.....	Columbus.....	5.90	3.00	2.75@ 3.25	S. E. Ky. mine run.....	Louisville.....	5.75	1.75	1.75	1.50@ 2.00	
Kanawha mine run.....	Columbus.....	5.50	1.85	1.85	1.75@ 2.00	S. E. Ky. screenings.....	Louisville.....	5.60	1.00	1.00	.75@ 1.25
Kanawha screenings.....	Columbus.....	5.40	1.10	1.05	1.00@ 1.15	S. E. Ky. lump.....	Cincinnati.....	5.60	3.10	3.10	3.00@ 3.25
W. Va. lump.....	Cincinnati.....	5.60	3.10	3.10	2.75@ 3.25	S. E. Ky. mine run.....	Cincinnati.....	5.50	1.55	1.55	1.40@ 1.85
W. Va. Gas mine run.....	Cincinnati.....	5.60	1.55	1.60	1.50@ 1.75	S. E. Ky. screenings.....	Cincinnati.....	5.35	.85	.90	1.00@ 1.20
W. Va. Steam mine run.....	Cincinnati.....	5.50	1.55	1.60	1.50@ 1.75	Kansas lump.....	Kansas City.....	6.00	4.00	4.00	3.50@ 4.50
W. Va. screenings.....	Cincinnati.....	5.40	.85	1.05	1.00@ 1.10	Kansas mine run.....	Kansas City.....	6.00	3.25	3.25	3.00@ 3.50
Hocking lump.....	Columbus.....	6.15	2.75	2.75	2.50@ 3.00	Kansas screenings.....	Kansas City.....	6.00	2.60	2.60	2.50@ 2.75
Hocking mine run.....	Columbus.....	5.75	1.85	1.85	1.75@ 2.00						
Hocking screenings.....	Columbus.....	5.35	1.15	1.10	1.00@ 1.20						
Pitts. No. 8 lump.....	Cleveland.....	7.25	2.50	2.55	2.15@ 3.00						
Pitts. No. 8 mine run.....	Cleveland.....	7.25	1.80	1.90	2.00@ 2.10						
Pitts. No. 8 screenings.....	Cleveland.....	7.25	1.25	1.25	1.20@ 1.30						

\* Gross tons, f.o.b. vessel, Hampton Roads.

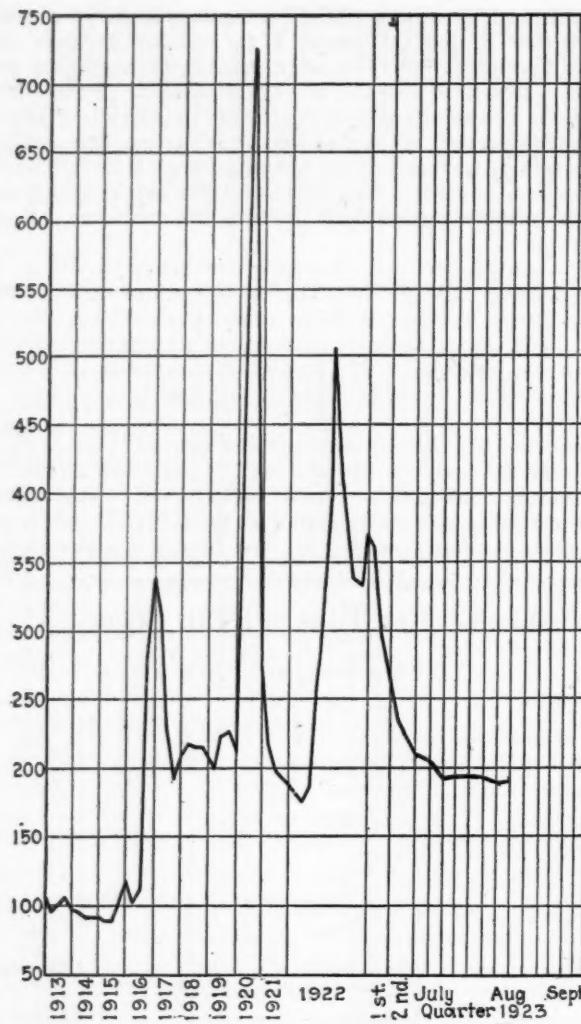
† Advances over previous week shown in heavy type, declines in italics.

### Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market Quoted	Freight Rates	Dec. 26, 1922	Aug. 6, 1923	Aug. 13, 1923†
		Independent Company	Independent Company	Independent Company
Broken.....	New York.....	\$2.34	\$9.00	\$7.75@ \$8.25
Broken.....	Philadelphia.....	2.39	7.90@ 8.10	7.90@ 8.10
Egg.....	New York.....	2.34	9.25@ 12.00	8.00@ 8.35
Egg.....	Philadelphia.....	2.39	9.25@ 11.00	8.10@ 8.35
Egg.....	Chicago*.....	5.06	12.50@ 13.00	8.50@ 12.00
Stove.....	New York.....	2.34	9.25@ 12.00	8.00@ 8.35
Stove.....	Philadelphia.....	2.39	9.25@ 11.00	8.15@ 8.35
Stove.....	Chicago*.....	5.06	12.50@ 13.00	8.50@ 12.00
Chestnut.....	New York.....	2.34	9.25@ 12.00	8.00@ 8.35
Chestnut.....	Philadelphia.....	2.39	9.25@ 11.00	8.15@ 8.35
Chestnut.....	Chicago*.....	5.06	12.50@ 13.00	8.50@ 12.00
Ranges.....	New York.....	2.34	8.25	8.30
Pea.....	New York.....	2.22	7.00@ 11.00	6.15@ 6.30
Pea.....	Philadelphia.....	2.14	7.00@ 8.00	6.15@ 6.20
Pea.....	Chicago*.....	4.79	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1.....	New York.....	2.22	4.00@ 5.00	4.00@ 4.10
Buckwheat No. 1.....	Philadelphia.....	2.14	5.00	4.00
Rice.....	New York.....	2.22	3.00@ 3.25	2.75@ 3.00
Rice.....	Philadelphia.....	2.14	2.50@ 2.75	2.75@ 2.50
Barley.....	New York.....	2.22	1.75@ 2.00	1.50@ 1.50
Barley.....	Philadelphia.....	2.14	1.00@ 1.75	1.15@ 1.50
Birdseye.....	New York.....	2.22	.....	2.10

\* Net tons, f.o.b. mines.

† Advances over previous week shown in heavy type, declines in italics.



Coal Age Index of Spot Prices Bituminous Coal F.O.B. Mines

Index	1923			1922
	Aug. 13	Aug. 6	July 30	Aug. 14
Weighted average price	196	195	197	550

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

County fields, with less business, get \$2.50@\$3.25 for lump. Mt. Olive region remains almost inactive. This region gets very little steam business.

Warm weather has practically stopped movement of everything from the Standard district. Railroad tonnage remains light. Prices are: 6-in. lump, \$2.35@\$2.50; 3x6 egg, \$2.35@\$2.50; 2-in. lump, \$2.10@\$2.35, steam nut, \$1.75@\$1.85; steam egg, \$1.85@\$2; screenings, \$1@\$1.10.

#### Kentucky Tries to Raise Prices

Kentucky demand looked more promising last week when several steam buyers entered the field, and when domestic demand improved, but the increase was short lived, and is claimed to have been driven out partly by an immediate price boost. Perhaps operators are not to be blamed when it is considered that average realization on West Kentucky coal is only \$1.76 and the mine run average in eastern Kentucky, \$1.85@\$1.90. The highest eastern Kentucky prices quoted were \$3.50 for prime 6-in. block, while screenings are low at 75c. a ton for non-gas, and as high as \$1.40 for best gas screenings. Mine run is \$1.75@\$2.25, good machine cut mine run selling at \$2@\$2.25, especially for gas coal.

Kentucky movement continues scattered to all sections, with no especially heavy buying from any one line of industry. Prepared coal has been in better demand and screenings

have been moving slightly better, especially gas screenings, while mine run has been rather slow. The Hazard field, in shipping large quantities of prepared coal to the Lakes has been steadily long on screenings, resulting in a low market.

Almost half the better western Kentucky mines are down, and the mushroom mines haven't been operating for some time past. A little coal is moving South, with a fair movement to Louisville, Nashville, and some movement to Michigan and the West. However, the west end of the state finds business slow.

#### Northwest Gets Less Coal

Duluth receipts for the season at the docks show that 6,048,593 tons of coal have been brought up this season to Aug. 1. Shipments from the docks during July exceeded the shipments in June—18,911 cars as compared to 15,157. Receipts at local docks fell off last week. Only 45 cargoes were received; eight of these were hard coal. The report of cargoes en route shows 26 cargoes in route and none of them anthracite.

The bituminous market at the Head-of-the-Lakes is irregular. The tendency is to weakness, with screenings selling lower than before this season. Prices are as follows: Youghiogheny and Hocking: lump, \$6.25 to \$6.50; run of pile, \$5 to \$5.25; screenings, \$3.75 to \$4. Splint; lump, \$6.75; run of pile, \$5.75; screenings, \$4. Kentucky: lump, \$7.50; screenings, \$4.25. Pocahontas: lump, \$10; run of pile, \$6.50; screenings, \$6.

Anthracite demand at Duluth remains strong and every chance of a short supply. Two of the companies are asking an advance of 20 cents, but this is not general.

At Milwaukee coal, more especially anthracite, is moving at a good pace. Pocahontas and the domestic grades of bituminous coal are on par with hard coal in point of demand. Business in steam coal is also picking up, the demand being mainly from remote points, however. Soft coal must move out more freely if the present volume of receipts by lake is to be maintained much longer, as the dock yards are becoming congested. The August record thus far embraces six cargoes of anthracite, aggregating 41,468 tons, and ten cargoes of soft coal, aggregating 70,420 tons, making cargo receipts since the opening of navigation 494,776 tons of anthracite, and 1,619,166 tons of soft coal.

#### Western Trade Improves

Coal business throughout Colorado and Utah is picking up slightly but the markets cannot be said to be lively in any particular. All Colorado bituminous domestic sizes have advanced 25c. a ton, though mine run and slack remain unchanged. Utah prices have not increased. Improved domestic demand thus far has been absorbed out of dealers' stocks and has not worked back to the mines yet. Lump moves from the mines with some readiness, but all other sizes drag. Pacific coast and Northwest business is fair for Utah producers but Idaho trade has fallen flat.

#### Better Outlook in Ohio

The Columbus market boasts of a healthier tone. After a month and a half of dull market things are beginning to look upward. There has been a reduction in the volume of distress coal, and the production south of the river has gotten back in the traces. Retail business is dull. Smokeless lump and egg is being quoted at \$10.50@\$11, run-of-mine \$7.50, bituminous lump, \$7.75@\$8.25 and slack, \$5. West Virginia 2-in. lump is quoted the same as last week, \$2.50@\$2.75 and southeastern Kentucky 2-in. lump at \$2.75, as compared with \$2.50@\$2.75 last week.

Householders in Central Ohio are showing a disposition to come into the market, which has tended to put a little more life into the retail situation. Replenishing the retail dealers' supplies has been fairly brisk, with Pocahontas and Splints the most popular grades. Steam coals are rather quiet as there is still some distress coal to be had at low prices, but the tonnage is being gradually reduced. Mines continue to close. While there is apparent little hope shown for any great change in the steam trade situation some believe there will be a spurt about Sept. 1.

There has been no change in the steam trade at Cleveland.

Consumers buy coal as they need it, and no indication has been shown to do any storing. The retail business shows some increased activity, operators reporting inquiries from that source as more numerous.

The market at Pittsburgh shows improvement, with slightly better demand and prices for steam grades and gas slack. Heavier production by the larger mines has more than balanced the closing of the small mines during the past four months. The market has preserved the improved condition of a week ago. Car loadings in the Central Pennsylvania District during the week ended Aug. 5 amounted to 17,881 cars, as compared with 17,892 cars the previous week. Production in Virginia picked up slightly, "no market" losses not being so heavy.

### Dullness Continues in New England

In New England there are few developments of interest. Inquiry remains much the same, with buying power practically removed from the market. Textile and other manufacturers are content with present reserves and in view of the large amount of over-buying in the spring it is likely they will be slow entering the market in the fall. Midsummer dullness continues undiminished so far as steam coal is concerned. A few stray cargoes are being purchased, especially for out-of-the-way points, but the aggregate tonnage is small and has no effect on prices.

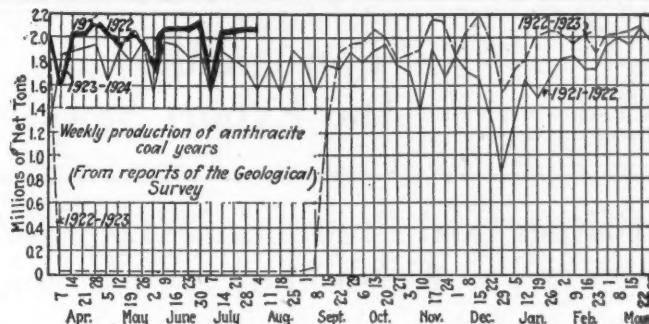
The Hampton Roads shippers report a better outlook for the balance of August than was anticipated. More coal is dumped for coastwise movement and there are enough inquiries off-shore to keep the range of quotations reasonably steady. Navy Standard grades are being held at \$5.50@ \$5.75 per gross ton f.o.b. vessel, but occasionally there are sales at 15@25c. less than the minimum open price.

All-rail from Central Pennsylvania movement to New England shows a light average. Mining has fallen off with slack inquiry and even producers of most favorably regarded coals are again canvassing for late August business. Prices were established on a minimum basis, costs considered, at the beginning of summer and since then there has been no opening for any advance. New England is still unresponsive to substitutes for anthracite. Receipts of the latter are large under the conditions and here there seems increasing confidence that somehow in the anthracite region a working arrangement will be patched up.

The flow of steam grades via the New York and Philadelphia piers, especially via the latter, has shown a steady decline since August 1. There is now practically no anxiety over transportation conditions in December and January and most of the utilities in this territory have as large stocks as it has ever been their practice to carry.

### Seaboard Market Quiet

Bituminous market conditions along the Atlantic seaboard remain dull, although there is a trifle better feeling. At New York inquiries were numerous, but there was scarcely any increased activity. At Philadelphia the better feeling was attributed to the unrest in the anthracite situation. More inquiries were received, and it is apparent that consumers are reaching the conclusion that it is well to have some coal on hand. Offerings of screened and sized coals are becoming more frequent. Inquiries for coke for domestic use are gradually increasing. Large consumers in Baltimore seem to have decided to buy in the open market instead of entering into contracts. The prospects at Birmingham are brighter. A better inquiry is reported and



more interest is being taken in the contract situation, some extending from six to eight months having been reported as closed within the past two weeks. Commercial mines report a shortage of equipment for loading, especially mines on the Southern Ry. The L. & N. is also unable to furnish the necessary number of cars to its independent operations.

Export demand remains quiet. There were a few charters closed for Italian and Dutch ports, and a similar activity prevailed with regards to South America. There was also a little business to the St. Lawrence and Cape Breton. During the first ten days of August 12,958 tons of cargo and bunker coal was loaded at Baltimore in three vessels.

### Demand for Anthracite Strong

While there is a feeling with consumers that there will be no strike in the anthracite fields this fall, the demand for the domestic coals continues strong and those users who have not yet received their winter supply are just as insistent as ever about obtaining it. The steam sizes are becoming stronger. While reports are occasionally heard at New York of some offerings of independent domestic coals as high as \$14 for straight lots of stove coal the general market is about 50c. lower, and there is not a great deal of coal at that price being received in that market. At Philadelphia quotations as high as \$14.25 for egg, stove and chestnut have been heard. Some shippers are not willing to accept orders for August delivery, claiming to be sold up to the end of the month. The steam coal demand has tightened, with independent product sold up to the end of the month. Consumers at Baltimore want their winter supply of domestic coals and are urging the dealers for deliveries.

The demand for heating coke is gaining strength, the increase coming from regular customers as well as from winter consumers, chiefly factories, who usually begin stocking up in July. There has been considerable inquiry from dealers in domestic fuels. The coke trade does not expect an anthracite suspension and do not attribute the increased demand to that source. Output of beehive coke production during the week ended Aug. 4 is estimated at 345,000 net tons, by the Geological Survey, a decrease of 16,000 tons from the previous week.

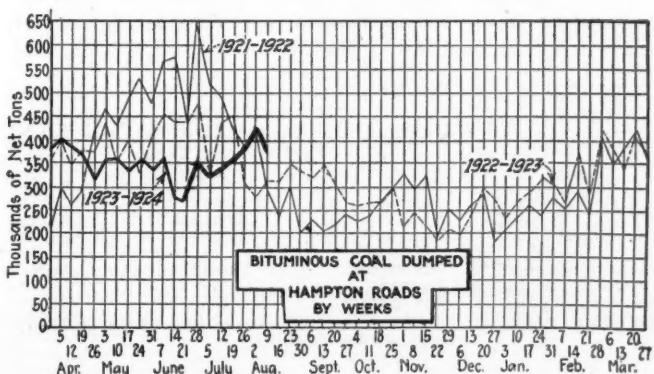
### Virginian Asks Case Be Reopened

Declaring that the recent decision of the Interstate Commerce Commission refusing permission to the Virginian Railway Company to extend its Guyon branch in West Virginia to open up new coal mines amounted in effect to confiscation of property without due process of law and therefore was unconstitutional, the Virginian Company filed a petition to reopen the case August 11.

The decision of the Interstate Commerce Commission was based upon the assertion by the Commission that the bituminous coal industry is over-developed and that the Virginian Railway last year was not able to supply sufficient cars to the mines already in operation along its lines.

### Car Loadings, Surpluses and Shortages

	Cars Loaded
	Cars Loaded
Week ended July 28, 1923.....	1,041,044 194,546
Previous week.....	1,028,927 190,788
Same week in 1922.....	848,858 76,295
	Surplus Cars
	All Cars Coal Cars
July 31, 1923.....	76,453 6,546
Same date in 1922.....	174,927 131,267
July 21, 1923.....	79,710 5,167
	Car Shortage
	9,570 4,774
	7,891 3,676



## Foreign Market And Export News

### British Coal Production Has Upward Turn; Welsh Market Stronger

British coal production increased 512,000 tons during the week ended July 28, as compared with the previous week, says a cable to *Coal Age*. The output for the week was 5,112,000 tons, while for the previous week it was 4,600,000 tons, and is the first increase in a couple of months.

A dispatch to a newspaper says that a large order has been placed by a gas company for Durham coal, with Kanawha gas coal as an optional substitute.

The Welsh coal market continues steady with a slight tendency to improve. Foreign buyers have been holding off because of the difficulties created in connection with the Ruhr and the condition of foreign exchanges.

Moderate business continues with France, and a considerable amount of other business is in hand, but shipment is held up until exchange rates make payment more favorable to buyers. Italian business is quiet, but there is a slight improvement in the demand from Germany and Belgium.

Orders for Wales include 20,000 tons of Monmouthshire large for the Palestine Railways; 50,000 tons (not described) for the Brazilian Railways; and 30,000 tons of large and small steams for the French State Railways.

The Newcastle market continues uncertain. There is still considerable delay in tonnage arrivals, owing to the effects of the dockers' strike, and coal which has accumulated can be bought at concessions in price.

#### Ruhr Coal and Coke Shipments

There were delivered to France and Luxembourg from Ruhr during June 219,500 tons of coal, 226,400 tons of coke and 19,400 tons of lignite patent fuel, while up to July 25 there had been received from the same source 52,800 tons of coal, 59,700 tons of coke and 2,500 tons of patent fuel.

Imports of coal during June was 2,561,000 tons, as compared with 2,193,300 tons in May, of which 177,000 tons came from the United States. Coal imports from the United States in May

amounted to 102,200 tons. Total exports in June amounted to 158,000 tons, as compared with 232,100 tons in May.

There were 378,000 tons of coke imported by France in June, as compared with 382,000 tons in May, of which 33,000 tons came from the United States, as compared with 76,700 tons in May. Exports of coke in June amounted to 47,000 tons in June, as compared with 33,400 tons in May.

#### Export Clearances, Week Ended Aug. 11, 1923

##### FROM BALTIMORE

	Tons
For Belgium:	
Nor. SS. Balto	10,772
For Canada:	
Nor. SS. Thomas Hoaland	4,877
For Cuba:	
Swed. SS. Gothia	2,924
Swed. SS. Gothia (coke)	179
For Italy:	
Ger. SS. Arcturus	5,993
For Porto Rico:	
Am. SS. Major Wheeler	539

##### FROM HAMPTON ROADS

	Tons
For Algeria:	
Ital. SS. Clara, for Algiers	5,823
For Bolivia:	
Nor. SS. Cedric	521
For Canada:	
Br. SS. Leicester, for Sydney, N. S.	3,646
For France:	
Sp. SS. Artagan Mendi, for Marseilles	6,905
Ital. SS. Nomentum, for Marseilles	6,112
For Holland:	
Br. SS. Belligrade	6,500

##### FROM PHILADELPHIA

	Tons
For France:	
Nor. SS. Hektor, for Marseilles	...

#### Stimulating French Coke Production

Efforts made by the French coke industry to increase its production have been limited by the inability to count upon an assured market, and as a result the extension of the French coke industry and even the recovery of the production lost reached in 1912 has been impossible, says Commercial Attaché Chester Lloyd, in a report to the Department of Commerce, at Washington. French cokeries produced about 3,660,000 tons in 1912 and only 2,400,000 in 1922, whereas coke consumption in France increased from 6,000,000 tons

before the war to almost 7,000,000 in 1922.

In order to relieve these conditions an agreement has been made between the metallurgical industry and the French cokeries by which for five years from April 1, 1923, the production of the latter will be taken over at conventional prices. The coal companies owning the chief cokeries undertake to deliver to the metallurgical companies which take part in the agreement tonnages of metallurgical coke at least equal to those which the metallurgical companies have recently been taking.

The metallurgical companies on their side agree to take all the coke which the coal companies may produce in their cokeries at a basis price of 107 francs f.o.b. factory, this price to be varied according to the wage rates paid for labor and to be based on coke analyzing 82 to 84 per cent carbon. Metallurgical and coke manufacturing interests hope that from the stability of the market thus created in France coke production may show a very appreciable increase which will carry the totals well beyond those reached under pre-war conditions.

#### Hampton Roads Market Firm

The market at Hampton Roads continued firm last week, in spite of lack of demand. Dumpings for the week ended Aug. 9 were lower than during the previous week and prices also showed a decline. Several cargoes to foreign countries were reported for early shipment, but they were not sufficiently large enough to change the market's tone. On Aug. 10 it was said vessels were waiting to load about 35,000 tons of coal.

#### Hampton Roads Pier Situation

	Aug. 2	Aug. 9
Cars on hand	1,629	1,692
Tons on hand	89,803	93,730
Tons dumped for week	148,161	160,964
Tons waiting	31,925	.....

	1,746	1,679
Cars on hand	100,330	95,691
Tons on hand	121,793	83,816
Tons dumped for week	2,666	23,805
Tonnage waiting	18,024	2,115

#### Pier and Bunker Prices, Gross Tons

	PIERS	
	Aug. 4	Aug. 11†
Pool 9, New York	\$5.35@ \$5.85	\$6.35@ \$6.65
Pool 10, New York	4.90@ 5.25	4.90@ 5.25
Pool 11, New York	4.50@ 5.00	4.65@ 4.85
Pool 9, Philadelphia	5.30@ 5.80	5.30@ 5.78
Pool 10, Philadelphia	4.60@ 5.30	4.60@ 5.35
Pool 11, Philadelphia	4.10@ 4.70	4.15@ 4.70
Pool 1, Hamp. Roads	5.25	5.10
Pools 5-6-7, Hamp. Rds.	4.50	4.80
Pool 2, Hamp. Roads	5.00	4.90

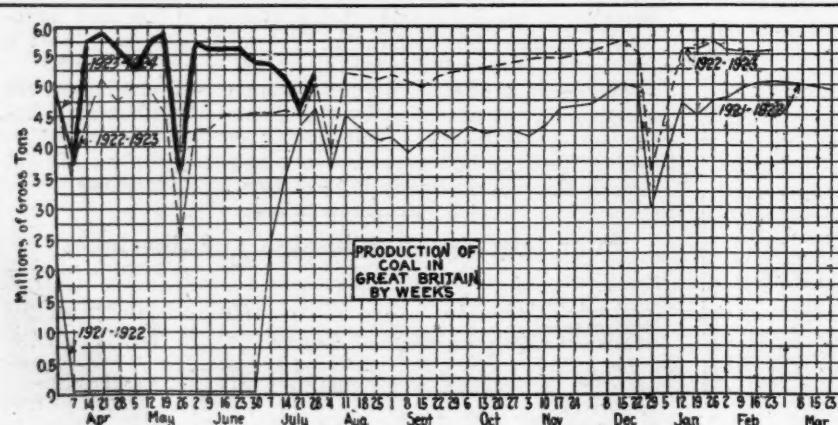
#### BUNKERS

Pool 9, New York	5.65@ 6.15	5.65@ 5.95
Pool 10, New York	5.20@ 5.55	5.20@ 5.55
Pool 11, New York	4.80@ 5.30	4.95@ 5.15
Pool 9, Philadelphia	5.70@ 6.05	5.70@ 6.00
Pool 10, Philadelphia	4.90@ 5.65	4.90@ 5.78
Pool 11, Philadelphia	4.35@ 5.00	4.35@ 5.00
Pool 1, Hamp. Roads	5.35	5.10
Pool 2, Hamp. Roads	5.15	4.90

#### Current Quotations British Coal f.o.b. Port, Gross Tons

	Quotations, by Cable to <i>Coal Age</i>	
	Aug. 4	Aug. 11†
Admiralty, large	30s. @ 32s.	30s. @ 31s.
Steam smalls	20s. @ 21s.	21s.
Newcastle	25s. @ 27s.	24s. @ 25s.
Best steams	27s.	27s.
Best gas	26s.	25s.
Best bunkers	26s.	25s.

† Advances over previous week shown in heavy type, declines in italics.



## News Items From Field and Trade

### CONNECTICUT

Stanley H. Bullard, president of the Connecticut Chamber of Commerce, in an address before the members of the State Association of Secretaries of Chambers of Commerce at Seaside Park recently, urged support of the state chamber's investigation of the coal situation. The purpose of the special committee, Mr. Bullard declared, will be to learn the price of coal at the mines, railroad rates, quality of coal, prices asked by merchants in various places, comparison of prices with other parts of the state, different ways in which to utilize the family coal supply and the best way to burn the different kinds of coal.

A survey of the coal requirements for Fairfield County will be made by the Fairfield County sub-committee of the Federated American Engineering Society, in conjunction with other committees throughout the country. The object of the survey is to ascertain the demand for the homes and for the country's industries, the favorable time to transport coal from the mines to Bridgeport and vicinity, prices at the coal mine and prices charged by dealers and by operators to manufacturers, and much other data.

### GEORGIA

The General Council of Atlanta has rescinded a resolution adopted some time ago establishing municipal coal yards. Some speakers denounced it as socialistic and unfair competition for legitimate business.

### ILLINOIS

The contract to supply coal for the city of Moline, has been awarded to the W. G. Block Co. at a price of \$1.75 f.o.b. mine, which is 50c. a ton less than in May. The maximum freight rate is fixed at \$1.66 a ton.

The annual picnic of the employees of the Springfield, and Taylorville, divisions of the Peabody Coal Co. was attended by 1,500 persons. It was held in Lincoln Park, Springfield. A score of officials of the company attended. A company band played during the day and a baseball game by teams representing the two divisions proved of interest, the Springfield team winning by a score of 3 to 1. The first-aid teams competed, being judged on their ability to rescue men from common mine accidents and in giving emergency treatment to injured persons. J. F. Monahan, manager of the Springfield division, was master of ceremonies.

Four drilling outfits are at work on leases east of Johnson City, owned by the Madison Coal Corporation, which is the name of the mining company controlled by the Illinois Central R.R. for fuel coal. Twenty-four holes are to go down. Some of them are to be 2,500 ft. deep. There are 13,000 acres in the tract through which the proposed I.C. cut-off will run. Indications point to the probable sinking of at least two mines in the near future on this tract.

What are said to be the largest rotary dumps in the world are now being manufactured at the Chicago plant of the Ramsay Dump & Machine Co. for the Lemont mines of the H. C. Frick Coal Co. There are two of these dumps with a capacity of 35 cars each. The Ramsay dump was invented and placed in use about 23 years ago by Erskine Ramsay, of Birmingham, Ala., vice-president and chief engineer of the Pratt Consolidated Coal Co., industrial leader and capitalist, and these dumps are now in use throughout the United States and in some foreign countries in the handling of coal, ore and other minerals.

Mine No. 15 of the Old Ben Coal Corporation at Weaver, near Marion, has resumed operation after a shutdown of several weeks. During the time the mine was idle, all boilers and other equipment of the steam plant were dismantled and taken out with the exception of one boiler to be used during the winter for heating. In place of the steam hoist, electrical hoisting machinery has been installed and will be used exclusively in the future at the plant. The change will make a marked difference in the number of men employed on top at the

plant as well as a large decrease in the tonnage consumed by the steam plant. Practically all machinery about the mine, both top and bottom, will be electrically operated under the new system.

A huge lump of coal is now owned by the Bell & Zoller Coal Co. at Zeigler. The lump is 11 feet long, 5 feet high and 4 feet and 8 inches wide and weighs 11 tons 1,500 lbs.

The Miller Coal Co. of Marion, capital stock of \$15,000, has filed articles of incorporation at Springfield. The company will take over and operate the Ingram mine near Marion. Many improvements will be made at the plant, including complete electrical installations and electrical coal cutting and hauling machinery. The incorporators of the new firm are: George B. Dodds, Carrier Mills, manager; Dr. J. B. Miller, Mrs. Ima Miller and W. T. Harris, all of Marion. Main offices of the new company will be maintained at Marion.

The Shed Coal Co. of Marion has incorporated for \$100,000 and will mine coal near Marion. Following are the officers of the new company: E. E. Allen, H. J. Faust and P. H. Williams.

The Caloric Coal Co. has purchased 82 acres of coal land immediately adjoining its strip mine property near Herrin. The purchase of the land has nothing whatever to do with the sale of its mine to the U. M. W. of A.

The Kortkamp mine of the Indiana & Illinois Coal Corporation at Kortkamp has resumed operations after an idleness since May 1. Five hundred men have gone back to work. The West End Coal Company's mine near Springfield is also in operation, having been idle since May 1, giving employment to 350 miners.

Work has been resumed at the old Pryce mine near Coal Valley. In times past this was one of the more prosperous mining communities and this mine was a factor.

Plans are under way to open up a large stripping field between Lewistown and Cuba along the lines of the Burlington. The Tiger Mining Co., the principal operator, is beginning to ship in machinery.

Five drillings on the William Butler and J. D. Smith farms, north of Knoxville, have revealed the presence of a good vein of coal at 250 ft.

The office of the Monmouth Coal Co. at Breerton was destroyed by fire recently with loss of \$3,000.

The mine of the O'Fallon Coal Co. has resumed work after being idle for three weeks or more.

Development of the strip mine of the Hartshorn interests at Elkville is increasing daily and by cold weather the company expects to have a fair size daily output. The outfit is one of the largest in the state.

Fred W. Price, who resigned as superintendent of the Tamaroa-Little Muddy Coal Co., at Tamaroa, several months ago, on account of ill health, has again resumed his duties in that capacity.

J. C. Bloomfield, who for a number of years was with C. H. Hart & Co., Chicago contractors, has now taken charge of the Industrial Works Chicago office at 1051 McCormick Bldg., handling the sale of industrial equipment in that territory.

The name of the Electric Steel Co., Chicago, was changed to Nugent Steel Castings Co. at a stockholders' meeting held in Chicago, May 28. There is no change of management, ownership, or personnel. Charles Piez is president of the company. W. J. Nugent is vice-president and general manager; Prentiss L. Coonley is treasurer, and C. A. MacDonald is secretary.

Damages to the extent of \$175,000 are asked in a suit filed against Williamson County by the Southern Illinois Coal Co. A claim for a similar amount filed by the same company several months ago was not allowed by the county board of supervisors. The suit is the result of the union rioting in June, 1922, when 22 men were killed and a score or more injured.

The Consolidated Coal Co. of St. Louis, has closed Mine No. 8, near Herrin, for a few weeks, repairing the tipple. The Wisconsin Bridge & Iron Co. of Milwaukee, Wis., is doing the work.

The Freeman Coal Co. of Herrin, has removed its offices from the Walker Building in that city to the mine east of town. The Burton Coal Co. Chicago, now occupies the rooms formerly used by the Freeman Coal Co. E. Skaggs is in charge of the office.

### INDIANA

Miami No. 10 mine team which recently won the cup offered by the Indiana Operators' Association for the best work at the State meet held recently at Sullivan, was instructed by Matthew Kerr, instructor for the Clinton Joseph A. Holmes Association of Clinton. Kerr has been interested in first aid work since 1912. He was one of the original members of the Clinton first-aid workers and was a member of the team that won the cup for the best mine rescue work at the national meet at Terre Haute in 1914. He was captain of the Dering Mine No. 6 team that won first honors at the Indiana State meet in 1920, took the team to the national meet held at Denver the same year and scored high, and the following year took a winning team to the national meet at St. Louis.



MIAMI NO. 10 TEAM, INDIANA OPERATORS' CUP

About seventy-five coal men were guests of the Cosgrove Coal Corporation of Pennsylvania and Illinois, at a conference of owners and controllers of mines operating under the company, the conference being held at West Baden, Ind., sixty miles north of Louisville, Ky., July 29 to 31. There were short business sessions on Monday and Tuesday mornings, the rest of the time being given over to golf and recreation.

C. L. Rader, of the Rader Coal Co., with offices in the Traction Terminal Building, Indianapolis, has been appointed receiver for the Queen Coal & Mining Co. He succeeded J. B. Sample, a banker, of Lafayette, who was appointed receiver last year. The Queen Coal & Mining Co. controls two of the largest Fourth Vein mines in the state, according to Mr. Rader. They are located in Jasonville, in Greene County. Offices of the company are in Lafayette. The appointment of a receiver last year was due largely to strikes and dull markets. Assets of the company are said to be between \$750,000 and \$1,000,000 and liabilities approximately \$150,000.

#### IOWA

An 8-ft. vein of coal has been found on the Nussbaum farm one and one-half miles south of Lacona, Ia. The vein is half a mile from the Burlington railroad and switch connections will be made.

The new mine of the Pearson Coal Co. recently opened near Clarinda is one of the modern shafts in that section of Iowa. The vein is 22 inches thick. A modern tipple 40 feet high, electrically equipped throughout, is an innovation there. This mine has a capacity now of 200 tons per day and on account of the good working conditions and modern equipment will rapidly increase its tonnage. The old Pearson mine has been abandoned. Mine No. 4, one of the old-time small tonnage type, is still in operation.

#### KANSAS

A recent purchase was that of the Hamaker coal holdings, comprising about 420 acres, west of Scranton, by the Capital Coal & Mining Co., of Topeka, a new concern with a capital of \$200,000. The price paid for the Scranton property is reported to have been \$125,000. Development will soon begin and the installation of modern, electrically operated equipment is being planned.

#### KENTUCKY

Vaden M. Lackey, secretary-treasurer of the Dixie Fuel Co., and holding the same position with the Douglas and Phoenix mining companies, of Louisville, operating West Kentucky mines, was married at Nashville, Tenn., on July 31, to Miss Mildred Adel Harrington.

The Rowe Coal Co., Madisonville, Hopkins County, has been incorporated by Lee S. Rowe, H. D. Rutledge and David Kirkwood, all of Madisonville.

At Mannington, in the western Kentucky field, the Jericho Coal Co., capital \$50,000, has been chartered by W. Mineter, of Memphis, Tenn., Dolph Woodruff, and B. D. Williams, Jr., of Mannington.

A threatened tie-up in river shipping of coal by low water has been averted by a couple of excellent rains over the past week, and the August 1 river stage is reported as the best that has been known in years. In most seasons there is very little coal moved over the midsummer season, but this has been an unusually rainy year.

W. B. Gathright, of the St. Bernard Mining Co., has returned to the Louisville office after visiting a number of retailers down in the state.

#### MARYLAND

New coal developments have been started at Barton by James J. McDonald and Arthur P. Hoffa. A survey of the mining property has disclosed an excellent vein of Bakertown seam coal. Mr. McDonald and Mr. Hoffa are also interested in another new development at Phoenix, near Barton.

#### MASSACHUSETTS

The Joint Special Coal Investigating Committee of Massachusetts has sent a communication to the anthracite operators and miners, serving notice that in the event of another strike on Sept. 1 it proposes to inaugurate and vigorously push a permanent boycott against the use of anthracite and that it will seek the aid of other anthracite-consuming states by placing its plans for the boycott before a conference of the governors of the New England states, which is to be held in Boston on Aug. 23.

#### MINNESOTA

The Village of Hibbing has purchased 10,000 tons of Elkhorn screenings for public utility use at a price of \$5.20.

The dock interests have asked a delay of ninety days in which to put in their answers to the charges made before the Federal Trade Commission relating to their alleged attempts at a monopoly and operation in restraint of trade. The hearings strung along for about seven weeks, from about June 1 to the close of July, with evidence introduced to support the charges, in the shape of endless documents, letters, circulars, minutes and a considerable amount of verbal testimony. Coal history from the dawn of creation was submitted to sustain the charges made. A ten days' continuance was granted on the ground that an attorney for the defense was ill, and this has been followed with a request for continuance for ninety days.

The B. & B. Fuel Co., 1601 Washington Avenue North, Minneapolis, has a record for being burglarized. The fifteenth robbery in six years, the other night netted \$100.

#### MISSOURI

The inroads made by electricity on the steam coal business in St. Louis is well illustrated in the matter of the ice plants in St. Louis. The Polar Wave Ice & Fuel Co. has in the last few years electrically equipped and is operating all of its ice plants with current from the Union Electric Light & Power Co. and part of this current comes from Keokuk and is generated by water. There are five companies in St. Louis engaged in the refrigeration ice business. In the plants of these five the current aggregates 11,560 horse power. The Polar Wave has eight ice plants with an average of 600 kw. to each plant. The Merchants Ice & Fuel Co. has two plants. The Mound City Ice & Cold Storage Co. has one plant. The St. Louis Refrigerating & Cold Storage Co. has one and the Federal Cold Storage Co. has a new plant. With the exception of the last two companies and the Mound City Ice & Cold Storage Co. all of these plants were formerly supplied with coal from coal companies' yards, using screenings principally.

#### MONTANA

The Chicago & Northwestern Ry. is about to build a line from Belle Fourche, S. D., to Miles City, tapping a rich coal field.

The U. S. Land Office at Billings was directed July 18 by the Secretary of the Interior to offer for lease a tract of 1,600 acres of public coal land in Montana. The land is in Carbon County in the vicinity of Joliet and is underlaid by the Bridger seam. Lease for this tract will be at a government royalty of 10c. per ton for coal mined, a minimum investment in mining operations of \$50,000 during the first three years of the lease, and a minimum production of 20,000 tons of coal a year beginning with the fourth year of the lease.

#### NEW YORK

Thomas MacLachlan has been appointed manager of the New York office of the Vulcan Iron Works, of Wilkes-Barre, Pa. Mr. MacLachlan succeeds M. E. Davis, who has gone into other lines of work.

Samuel B. Flagg has been made special representative in New York of the Sanford Riley Stoker Co., of Worcester, Mass. Mr. Flagg for several years was engaged in fuel studies for the U. S. Bureau of Mines. For the past six years he has been a fuel specialist on the staff of the Electric Bond & Share Co.

#### OHIO

Glen White Coal & Lumber Co., of Baltimore, have removed their offices from 209-211 Union Trust Building to 10 East Pleasant Street.

As a result of extensive investigations of the coal field around Wellston, a vein of No. 4 coal has been found 600 feet beneath the surface.

A first-aid and mine-rescue training school has been opened at Marion. Organization and instruction is under the supervision of Thos. Rogers, of Herrin, of the state mine-rescue and first-aid department. The school is open to all who care to attend, the course is free and certificates will be issued to all who complete the course.

Among the operating and jobbing concerns chartered in Ohio recently are the Turkey Foot Coal Co., Canton; capital, \$10,000; to mine and sell coal; by Ida Weisend, James E. West, J. F. Dougherty,

L. A. Brill and Marie Bedard. The Brenwitt Coal & Coke Co., of Toledo, capital \$25,000, to produce and sell coal and coke, by Lee J. Brenneman, Albert H. Miller, A. E. Wittwer, James P. Schrider and Daniel J. O'Rourke. The Alliance Acme Coal Co., Alliance; capital, \$20,000; to mine and sell coal, by T. C. Tessem, R. A. Evans, E. M. Evans, M. H. Tessem and G. R. White. The Northeast Coal Co., Youngstown, capital, 5,000 shares, no par value designated, to mine and sell coal, by Charles F. Smith, J. P. Huxley, T. Lamar Jackson, Charles J. Jackson and Norman A. Emery. Everybody's Coal & Iron Co., Dayton; capital, \$10,000; to buy and deal in coal; by Joseph Sandmel, Joseph Tandy, Anna Sandmel, William Tandy and Kate Tandy.

The Carrollton Coal Co., of Canton, has been chartered with a capital of \$50,000 to operate in the Upper field by S. D. Valley, T. F. Kuckelman, Abel Lourdot, Arthur L. Nebel and Edward Reinhart.

The Case Coal & Mining Co., of Akron, has been incorporated for \$60,000 by H. R. Stevenson, C. Lloyd Case, W. E. Davis, Thomas Williams and W. L. Case.

#### PENNSYLVANIA

The Henderson Coal Co. of Pittsburgh, Pa., has contracted with the Roberts & Schaefer Co. for the installation of a new Marcus screen at its tipple at Henderson.

The appraised valuation of the property and plants of the American Coke Corporation fixed by the Board of Appraisers appointed by the U. S. Court for western Pennsylvania has been placed at \$2,161,000, with indebtedness of about \$3,000,000.

A State charter was issued at Harrisburg recently for the Underhill Coal Mining Co., of Tyler, Clearfield County, the purpose of which is mining, buying, selling and dealing in coal. The company's capital stock is \$25,000, and Donato DiSalva, Tyler, is treasurer. He, John Palumbo and Anna Palumbo, of Force, are the incorporators.

The Phoenix Park colliery of the Philadelphia & Reading Coal & Iron Co. has resumed operations after several weeks' idleness, due to a dispute between the miners and the company as to the duties of men who were transferred from town locals to colliery locals.

John V. Berry, well known through his work throughout Pennsylvania and other states with the U. S. Bureau of Mines, has been appointed chief of the first-aid and mine-rescue division of the Bethlehem Mines Corp., with headquarters at Johnstown.

Sinking a shaft for the Springfield Coal Mining Co. on the David Black farm in Cambria township, Cambria County, near Ebensburg, is well under way and the company will start shipping fuel this fall. The new mine will have an outlet over the Pennsylvania and the Cambria & Indiana railroads. New houses are being erected for the accommodation of miners.

The first meeting of the New State Workmen's Compensation Board was held at Harrisburg, July 10. Paul W. Houck, acting chairman since the resignation of Harry A. Mackey, presided and the two new members, Chairman T. Henry Walnut, Philadelphia, and John L. Morrison, Greenville, watched the proceedings. Fifteen cases were heard at the initial session.

James J. McNulty, who is Burgess of Throop, has been appointed claim agent for the Price-Fancoast Coal Co., of Throop, and the West End Coal Co., of Mocanaqua with office at Scranton, and his duties are to settle all workingmen's compensation cases originating at the collieries of the companies and to adjust damages done to houses or other real estate by mining operations.

Thomas Kennedy, president of District No. 7, United Mine Workers of America, upon solicitation of a committee of the Non Partisan League, has been urged by his most intimate friends to become a candidate for the office of sheriff of Luzerne county. Although Mr. Kennedy has not committed himself upon the matter, it is generally believed that he will throw his hat into the ring in the scramble for the office.

Thomas McCaffrey, of Brier Hill, Fayette County, who recently resigned as president of the Brier Hill Coke Co., a subsidiary of the Brier Hill Steel Co., when that company was absorbed by the Youngstown Sheet & Tube Co., has removed his place of residence to Pittsburgh, where he has entered the iron and steel sales business.

Negotiations are on, and the price is said to be satisfactory, between the Pennsylvania Coal & Coke Corporation and the owners of the coal underlying the Newton Price farm between Ebensburg and Car-

rolltown, Cambria County, for the purchase of the valuable site. This tract will be developed on a large scale by the corporation seeking it.

**William H. Blight** of Elmira, N. Y., has recently been elected president of the Eagle Mining Corporation, of Ridgeway.

Gus Carlson, Edward Gustenon and Emil Johnson, miners, are dead as a result of a cloudburst which struck Plumville July 30. The three men were working in the mine of the Sottern-Rinn Company when the cloudburst caused water to run into the shaft after doing great damage to the town itself. A score of other men were employed in the mine, but escaped the rush of the water.

**John B. T. Jones** has been appointed assistant general manager of the Hudson Coal Company, with headquarters in Scranton. For the last three years he has been superintendent of Pine Ridge, Delaware and Laurel Run collieries of that company. Mr. Jones is succeeded by E. B. Wilhain, formerly superintendent of Gravity Slope colliery at Archbald. Mr. Jones has been with the Hudson Coal Company since boyhood. In 1890 he started as a messenger boy at Scranton. He was sent to the Wilkes-Barre division in 1910 as mining engineer. He was appointed superintendent of the Laflin colliery in 1916 and four years later was given charge of the Pine Ridge, Delaware and Laurel Run operations.

**Hudson Coal Co.** has purchased a several acre tract of land in Throop, formerly owned by the Price-Pancoast Coal Company. The land is improved with several dwellings and was sold for \$20,000. The Hudson Coal Company previously owned the coal under the land in question.

**Payment of the Hostetter-Connellsville Coke Company bonds** was made on Aug. 1, amounting to \$80,000. The original issue of \$1,500,000 was sold Feb. 1, 1892. The bonds were issued to become due Feb. 1, 1942, but a sinking fund was provided for the redemption before maturity, being made up by setting aside 10 cents per ton on each ton of coal mined and 15 cents per ton on each ton of coke manufactured.

**The Hockensmith Wheel & Mine Car Co.**, Penn., announces that F. C. Hockensmith, one of the founders and for many years the president of the company, is now chairman of the board of directors. He is succeeded by W. D. Hockensmith, formerly vice-president, whose title is now president and general manager. C. L. Herbster, formerly second vice-president, is now vice-president. D. M. Wagoner, who with F. C. Hockensmith, founded the company, remains treasurer, and F. L. Shallenberger continues to be secretary. W. K. W. Hansen retains his position as general superintendent, while a new position, that of assistant plant manager, has been created for G. E. Ogilvie, who was formerly assistant general superintendent.

**Sixteen hundred acres** in the Blue Lick field in Somerset County recently acquired by Rowe Brothers, prominent Myersdale operators, is being prepared for operation. The tract contains high grade Pool 9 coal lying along Blue Lick Creek, near Myersdale. This is the largest undeveloped coal tract in southern Somerset County. Four miles of railroad track is being laid and connections will be made with both the Western Maryland and the Baltimore & Ohio railroads. The land was acquired from Daniel B. Zimmerman by Frederick Rowe, Jr., and Frederick Rowe, Sr., will become the directing head.

**Uehling Instrument Co.**, Paterson, N. J., manufacturers of CO<sub>2</sub> recorders and draft and vacuum gages, have named the Amsler-Morton Co., Fulton Building, Pittsburgh, as agents for western Pennsylvania and John A. MacDowell, 2039 Railway Exchange Building, St. Louis, Mo. for eastern Missouri and southern Illinois. H. R. N. Johnson, who formerly represented the Uehling Instrument Co. in Minnesota and the Dakotas, has joined the W. P. Nevins Co., 120 South Ninth Street, Minneapolis, Minn., which company is now the official Uehling representative in that territory.

In order to provide more adequate facilities for an increasing volume of business in the Pittsburgh district, the Pennsylvania Crusher Co. recently moved its offices to more adequate quarters in the Oliver Building, where operations will be continued under the management of H. M. Hallatt, as District Manager. The business of the Pittsburgh office is largely concerned with coal-preparation machinery for mines, byproduct coke plants, central stations and industrial power plants, and with heavy duty primary and secondary crushers for large cement and lime plants.

**Hugh P. Mullen**, of Johnstown, was named receiver for the Heshbon Coal Min-

ing Co. on June 4 by C. Randolph Myers, of Ebensburg, referee in bankruptcy. The Heshbon company's schedule shows total assets of \$87,000, made up of \$57,000 worth of real estate and \$30,000 in stock in trade, including tipple, mining cars, a leasehold and various operating equipment. Liabilities aggregate \$122,262.12 mostly in secured claims. Fred G. Beiter, of Johnstown, is secretary and treasurer of the concern. The company owns and has been operating about 380 acres of coal in West Wheatfield township, Indiana County.

**The American Briquet Co.** is reported to have started construction on a new plant to make briquets from anthracite culm at Lykens. It will cost \$350,000 and be ready for operation in September. It will be of steel and concrete construction, and will replace the company's property destroyed by fire several months ago. Fifty-five men will be employed, and the plant will turn out 10,000 tons of briquets monthly. A. D. Parker, of Westchester is president of the company, which disposed of its products mainly in New England and states adjacent to Pennsylvania. The company purchases its culm from the Susquehanna Collieries Co.

**Sale of the Lehigh & Wilkes-Barre coal stock** by the directors of the Central Railroad of New Jersey to the Jackson E. Reynolds Syndicate of New York, under the Reading segregation decree, for \$32,490,980, was approved Aug. 8 by the Federal District Court at Philadelphia. Objections to the sale by Isaac T. and Mary T. W. Starr, minority stockholders of the Jersey Central, were dismissed by the court, which held that they had failed to prove allegations that the stock was sold to the Reynolds Syndicate at an inadequate price.

Plans of the United Mine Workers for a demonstration in Scranton on Mitchell Day, October 29, at the unveiling of the memorial to John Mitchell, have been temporarily abandoned. The monument will not be completed by that time. The original plans for the monument called for two sculptors to work on the memorial at the same time, but because of the desire for absolute uniformity throughout, only one artist is to do the work. Under this arrangement the work will not be completed before the middle of December. Officers of the miners have not decided whether they will hold the celebration in December or postpone it until April 1 next, the anniversary of the eight-hour day.

**Prof. Homer G. Turner**, of Lehigh University, whose tests showing the structure of anthracite have been noted in *Coal Age*, will make a trip this summer through the Pennsylvania anthracite fields from which new scientific results are expected. Results obtained by applying the Turner method to specimens found on the trip may enable coal operators to determine, with a few minutes' work, the particular coal bed from which a sample has been obtained, without necessity of long and expensive drilling operations. Professor Turner also will collect samples of coal from various beds in the different fields with the hope that he may show development of plant life during the long period of coal formation in Pennsylvania.

**Rinaldo Cappellini**, who on Aug. 1 became president of District No. 1, United Mine Workers of America, at Scranton, has named Alexander Campbell, Anthony Surovich and Thomas John, members of the wage scale committee, to succeed M. J. McGowan, A. J. Franey and James Hennessey, who were appointees of former President W. J. Brennan. Miss Luch Breuche was appointed secretary to President Cappellini. Former President Brennan has been appointed an international organizer.

**Directors of the People's Fuel & Supply Co.** of York, with mines in Bedford County, will ask stockholders to approve an increase in capital stock from \$100,000 to \$350,000.

**Appointment of several prominent Philadelphia coal operators** to important committees of the National Coal Association has been announced by John C. Brydon, president of the organization. S. Pemberton Hutchinson, president of the Westmoreland Coal Company, No. 224 South Third Street, is chairman of the finance committee. G. Dawson Coleman, Sr., president of the Marshall Coal Company, No. 1448 Land Title Building, and R. H. Knodle, vice-president of the Stonega Coke & Coal Company, No. 1727 Land Title Building, are named for the foreign trade committee. Mr. Hutchinson also will serve on the Government relations and railroad relations committees.

**Frank A. Vershinski**, 17, was instantly killed Aug. 6 in a stripping operation at the Sayre colliery, Mount Carmel, when

he was covered by several hundred tons of coal dislodged by a heavy charge of dynamite. His presence in the vicinity was not known and when he failed to return home at the usual time a friend became apprehensive and went to the stripping where the youth's dinner pail was found.

#### RHODE ISLAND

George H. Webb, Commissioner of Labor for Rhode Island, is making a survey of the coal supply in that state and has sent to retail dealers questionnaires asking for the amount of coal on hand and the probable supply during the winter. The questionnaire also asks for the amount of coal received since April 1, 1923, and the estimated amount required from Aug. 1 to April 1, 1924.

#### TENNESSEE

The tenth annual miners' field day and first aid contest, given under the auspices of the coal operators of Tennessee, Tennessee mine inspectors and the U. S. Bureau of Mines, was held Aug. 4th at Knoxville. The first aid teams demonstrated four problems: One one-man event, one two-man event, and two full-team problems. Black Diamond Collieries Company Team No. 4 won the first prize of \$50, W. H. Sharp, captain. The second prize of \$45 went to Team No. 3, of the Black Diamond Collieries Company, C. F. Bennett, captain. The third prize of \$40 went to the LaFollette Coal & Iron Company team of LaFollette, N. D. Wilson, captain. The fourth prize of \$35 was won by the Highland Coal & Lumber Company team, of Davidson, H. B. Holmes, captain. J. M. Webb, of the U. S. Bureau of Mines, Rescue Sta., trained the teams in their work.

#### UTAH

In order to facilitate the distribution of cars to and the handling of coal from mines located on the Denver and Rio Grande Western R.R., Receiver J. H. Young will at once construct a telephone line extending from Soldier Summit to Kenilworth, with lines to the Spring Canyon branch, which will be an addition to the present service between these points and is to be used exclusively in the distribution of empties, handling of coal loads, and otherwise serving the various coal operators in that section. It is expected the line will be in operation by Sept. 15. The following mines will benefit most: Kinney, Scofield, Utah Central, Utah Mine, Clear Creek, Winter Quarters, Mutual, Rolapp, Peerless, Storrs, Standard, Liberty, Castle Gate, Rains and Kenilworth. Offices of R.R. agents will be connected with the new circuit and booth phones for use of train crews will be provided at Hales, Spring Canyon, Junction and Kenilworth Junction. Great improvement is expected to result in the handling of the car supply in the territory. It will eliminate the indirect method of communication now obtaining with the dispatchers at Soldier Summit through the local agents. The train crews handling coal trains, as well as the mine operators, in direct communication with dispatchers and car distributors and will make possible the handling of special and emergency conditions arising from time to time. The improvement is said to be evidence of the increased interest taken in Utah coal output by the Rio Grande road. Other improvements are being considered.

The mine of the Columbia Steel Corporation is now ready to produce. The railroad is finished to the tipple yard and all ballasted. The construction of the company's steel plant itself is also making good progress.

#### WEST VIRGINIA

The Ohio County Fuel Co., of West Virginia, has purchased 3,350 acres of coal in the Richland district in the "Pan Handle," including 23 tracts, for a consideration of about \$839,000. The fuel company is an associate of the American Gas & Electric Company and the West Penn Power Company, and it is understood the acreage was bought to assure the Windsor power plant owned by these companies a supply of coal for their power operations.

Deeds have been filed at Fairmont showing the transfer of 1,000 acres of Sewickley coal, the entire plant of the Rivesville Coal Company and other interests to Mortimer L. Hudson of Chicago, secretary of the Edward Hines interests. The deeds convey limited holdings of the New England Fuel and Transportation Company, comprising Sewickley coal on Pharaoh's run, just north of Rivesville; holdings of John F. Phillips, C. D. Robinson and Jacob F. Straight, as well as the property of the Rivesville Coal Company. The mining plant is known as the Hood mine and lies between Rivesville

and Fairmont and the Cleveland Coal Company's property. The Hines interests own other large coal acreage in the Fairmont region.

#### WASHINGTON

The Cinebar Coal & Coke Co. has been incorporated with a capital of \$100,000 by Morgan G. McBride, L. B. Pearce and L. B. McBride, of Seattle, and Cleo N. Henriet and J. W. McBride, of Chehalis, to operate two sections of coal land at Cinebar, 28 miles east of Shehalis.

#### WISCONSIN

An explosion in the benzol distillation unit of the Milwaukee Coke & Gas Co.'s plant on Wednesday afternoon, Aug. 1, wrecked that portion of the works and caused a loss estimated at approximately \$250,000. Three men lost their lives. The coke unit and the coal handling appliances escaped practically unharmed and little delay will result to these activities of the company. The fire at one time threatened the entire plant, the destruction of which would have seriously curtailed the city's gas supply, as the Milwaukee Gas Light Co. receives all the gas produced by the coke plant. Over 400,000 tons of coal have been handled over the Coke & Gas Co.'s dock thus far this season.

Coal contracts were let by the city of Milwaukee on Thursday, Aug. 2, to the Feilens Coal & Dock Co. for 1,600 tons of anthracite at \$15.55 for egg and stove sizes, \$13.55 for pea and \$11.05 for buckwheat. These prices are \$1.10 above the prices the city paid last year. The Milwaukee-Western Fuel Co. and the Great Lakes Coal & Dock Co., bidding jointly, were awarded a contract for 21,000 tons of bituminous coal at \$6.20 per ton. The price paid last year was \$5.90 per ton. The United Coal & Dock Co. will supply the city with 20,000 tons of bituminous coal at \$5.54 per ton. The coal embraced in the contracts will be delivered at the various city institutions, including the schools, as required.

#### WASHINGTON, D. C.

Chairmen of committees of the National Coal Association appointed for the coming year are as follows: Policy committee, J. C. Brydon, president Quemahoning Creek Coal Co., Somerset, Pa.; executive committee, J. C. Brydon (by virtue of by-laws); finance committee, S. Pemberton Hutchinson, president Westmoreland Coal Co., Philadelphia; foreign trade committee, T. F. Farrell, second vice-president, Pocahontas Fuel Co., New York; government relations committee, Walter H. Cunningham, president, Cunningham, Miller & Ensor, Huntington, W. Va.; membership committee, Walter Barnum, treasurer, Pacific Coast Co., New York; publicity committee, C. E. Bockus, president, Clinchfield Coal Corporation, New York; railroad relations committee, C. H. Jenkins, vice-president, Hutchinson Coal Co., Fairmont, W. Va.

The crew of mine-rescue car No. 2 of the Bureau of Mines, Department of the Interior, has completed a month's work of conducting mine-rescue and first-aid training in various Colorado coal mining camps. Following this work the car proceeded to southern Wyoming to do similar work in that region. The personnel of mine-rescue Car 3 recently conducted training at Russellton, New Castle, Sinnemahoning and State College, Pa. Training has been given at Collingsville, Ill., by the crew of Car 4. Car 5 has been conducting training in Ohio, holding classes in first aid at Coshocton, Zanesville and Cambridge. A class of students at the Case School of Applied Science, Cleveland, was given first aid and mine rescue training. Car No. 6 spent some time in giving first aid training at Wauke, Moran and Melcher, Iowa. The majority of those attending the classes at Moran were of foreign birth, and unable to speak English intelligently, but in spite of this drawback 18 miners completed the course of instruction. The crew of car No. 7 has conducted training at plants of the Davis Coal & Coke Co. at Thomas, Davis, Kempton, Henry and Coketon, W. Va. Miners taking special courses at the University of West Virginia, Morgantown, have been given training, as have students at the summer session of the New River State School. Every man on the payroll of the Kempton, W. Va., plant of the Davis Coal & Coke Co. has at some time completed the Bureau of Mines first-aid course of training. Car No. 8 recently conducted classes at Henryetta, Okla., during the progress of the King Coal Karnival.

A description of the Wheat electric cap lamp, a recent addition to the list of electric lamps placed on the permissible list of the Bureau of Mines, Department of the In-

terior, is given in Serial 2493, recently issued. The Wheat lamp is the seventeenth lamp to be placed upon the permissible list.

A description of one of the recent additions to the list of permissible electric cap lamps approved by the Interior Department, through the Bureau of Mines, is given in Serial 2500, "The model E' Edison electric cap lamp," by L. C. Ilsley, electrical engineer, and A. B. Hooker, assistant electrical engineer. This lamp has been given approval No. 18 by the Bureau of Mines. Serial 2500 may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

#### CANADA

The Canadian Pacific Railway has not announced its decision in regard to reduced rates on western coal to eastern Canada in line with the policy of the Canadian National Railways. Sir Henry Thornton, president of the C. N. R., announced in the West a few days ago that the government lines would grant an "experimental" rate of \$7 a ton on coal to the East. It is understood that the Canadian Pacific Railway has this question under advisement, and that a decision in favor of or against the experiment may be made within a few days.

H. Greenfield, Premier of Alberta, expresses confidence that Alberta coal can be shipped into Ontario and sold at a price that will be lower than that paid for Pennsylvania anthracite. The success of selling Alberta coal in Ontario depends upon what rate the railway companies will fix for carrying the fuel, Premier Greenfield writes. The recent experiment of shipping Alberta coal for demonstration purposes in Ontario was so successful that the Alberta government is hopeful that the railways will see their way clear to cut the present rate of \$9 per ton.

A four-foot seam of coal has been discovered at Block Brook, Boularderie, Cape Breton, Nova Scotia. The discovery promises a possibility of a deposit of upward of 3,500,000 tons of excellent coal. The property is situated about 500 feet from the main road and less than 500 feet from the deep water of the Bras d'Or, and is so situated that a trestle can be constructed to deep water of the Bras d'Or where there is sufficient water to accommodate any steamer that could navigate the channel.

The fuel authorities of the Dominion Government are watching the United States coal situation. The Advisory Fuel Committee, established by the government last summer, is still in operation and is working in harmony with the Dominion Fuel Board set up last winter for the investigation of the general question of fuel supply. Touch is also being maintained with such of the provincial fuel controllers as are still in office. According to the latest returns available at the Dominion Bureau of Statistics, imports of fuel into Canada during the present season have been kept up to the average. The imports of anthracite from the United States for the first quarter of the coal year were 1,303,000 tons, as compared with 260,000 tons in 1922, and 1,238,000 tons in 1921. The imports of bituminous coal from the United States for the same period have been 3,392,000 tons this year, as compared with 1,580,000 tons in 1922, and 2,516,000 in 1921.

#### Association Activities

Coal and coke agents of the railways operating in the states of Indiana and Illinois are to hold their September meeting in Cincinnati, according to an announcement made in Cincinnati by Fred Reigel, agent for the Southern Railway. Rates and general traffic matters concerning the movement of coal will be gone over. This is the first time that these agents have held their meeting outside of Chicago for years.

Shippers in upper Wisconsin and Michigan and coal dock operators at various lake ports in those regions have issued a pronunciamento against "any form of compulsory consolidation of railroads." They hold that more economy can be effected and greater good done to the business interests, as well as to railroads of the country, by the removal of even a small part of the unnecessary expense now placed upon the carriers by some of the useless federal and state regulations than can be brought about by any scheme of consolidation.

There is a movement on foot to bring about a unification of rail terminals at Milwaukee. This is of interest to the coal trade, as fully 80 per cent of the coal business of the port is handled over the rails of one railway line. The unification, when brought about, will result in a large saving in switching charges on coal alone.

#### Obituary

Harry C. Mason, land agent for the Lehigh & Wilkes-Barre Coal Co., died at his home in Wilkes-Barre on Aug. 2, after several months' illness. He had been land agent for the company since 1899, previous to that time having been a member of its engineering corps.

A. H. F. Mitchell, pioneer coal man of Utah, died recently at Logan at the age of 88. Mr. Mitchell was interested in the development of the first coal mines at Coalville. He was a native of England.

Charles S. Cannon, of the C. S. Cannon Coal Co. of Seattle, was drowned in Hoods Canal near Union City, Washington, July 17, while trying to save a 13-year-old girl who had fallen out of a rowboat in which they had been riding.

#### Recent Patents

**Bearing Box for Mine Cars.** W. T. Miller, Park Place, Pa.; 1,457,384. June 5, 1923. Filed Sept. 15, 1921; serial No. 501,009.

**Powdered-Coal Apparatus.** Aubrey J. Grindle, Chicago, Ill., assignor to the Grindle Fuel Equipment Co., Chicago, Ill.; 1,457,522. June 5, 1923. Filed July 29, 1919; serial No. 314,137.

**Mine Alarm Instrument.** Charles W. Hurl, Nanty-Glo, Pa., assignor to the Miners' Supply & Equipment Co., Johnstown, Pa.; 1,458,060. June 5, 1923. Filed Dec. 6, 1921; serial No. 520,245.

**Manufacture of Coal or Like Briquettes.** Henry G. Lloyd, Surbiton, England; 1,458,716. June 12, 1923. Filed June 1, 1921; serial No. 474,202.

**Miners' Knife.** J. H. Widas and F. S. Widas, Caspian, Mich.; 1,458,789. June 12, 1923. Filed Sept. 16, 1922; serial No. 588,710.

**Mounting for Mine-Car Wheels.** Alfred R. Anderson, Rock Springs, Wyo.; assignor of one-half to J. F. Dominiski, Rock Springs, Wyo.; 1,459,134. June 19, 1923. Filed March 14, 1923; serial No. 625,114.

**Attachment for Miners' Lamps.** Golchi Date, Sublet, Wyo.; 1,459,576. June 19, 1923. Filed May 31, 1922; serial No. 564,782.

**Mining Machine.** Cyrus S. Oldroyd, Cincinnati, Ohio; 1,460,077. June 26, 1923. Filed Jan. 8, 1921; serial No. 435,821.

#### Coming Meetings

**The American Institute of Mining and Metallurgical Engineers** will hold its annual meeting in Canada. The meeting will start Aug. 20 at Toronto and end Aug. 30 at Montreal. Secretary, F. F. Sharpless, 29 West 39th Street, New York City.

**Rocky Mountain Coal Mining Institute** will hold its summer meeting Aug. 27 to 29 at Salt Lake City, Utah, in conjunction with the International Safety and First-Aid Meet. Secretary, Benedict Shubart, Denver.

**New York State Coal Merchants' Association** will hold its annual convention on Sept. 10-12 at Sacandaga Park, N. Y. Executive secretary, G. W. F. Woodside, 250 Arkay Building, Albany, N. Y.

**Oklahoma Coal Operators' Association** will hold its annual meeting Sept. 13 at McAlester, Okla. Secretary, A. C. Casey, McAlester, Okla.

**The American Mining Congress** will hold its twenty-sixth annual convention in conjunction with the National Exposition of Mines and Mining Equipment, Sept. 24-29, at the Milwaukee Auditorium, Milwaukee. Secretary, J. F. Callbreath, Washington.

**National Safety Council** will hold its twelfth annual safety convention at the Buffalo Statler Hotel, Buffalo, N. Y., Oct. 1-5. Secretary, W. H. Cameron, 168 No. Michigan Ave., Chicago, Ill.

**The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will hold its annual meeting Oct. 19-20 at Huntington, W. Va. Secretary-treasurer, Herbert Smith, Robson-Pritchard Bldg., Huntington, W. Va.

**Coal Mining Institute of America** will hold its annual meeting Dec. 19, 20 and 21 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Building, Pittsburgh, Pa.